SLV-770HF/771HF/920HF
RMT-V140/V140A

SERVICE MANUAL

US Model
SLV-770HF/771HF/920HF
Canadian Model
SLV-770HF/920HF
Chilean Model
Mexican Model
Philippine Model
PX Model
Tourist Model
SLV-920HF

VHS Hi-Fi

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT II for MECHANICAL ADJUSTMENTS. (9-972-816-11)**

SPECIFICATIONS

System

Format
VHS NTSC standard

Video recording system
Rotary two-head helical scanning FM system

Video signal
NTSC color, EIA standards

Tape speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.11 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only

Maximum recording/playback time
9 hrs. in EP mode (with T-180 tape)

Fast-forward and rewind time
Approx. 1 min. 30 sec (with T-120 tape)

High-speed rewind time
Approx. 3 min. (with T-120 tape)

Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84

Antenna
75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE IN 1 and 2
VIDEO IN, phono jack (1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (2 each)
Input level: –7.5 dBs (0 dBs = 0.775 Vrms)
Input impedance: more than 47 kilohms

LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack (2)
Standard output: –7.5 dBs
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms

CONTROL S IN
Mini jack (1)

CABLE BOX CONTROL
Phono jack (1)

Timer section

Clock
Quartz locked

Timer indication
12-hour cycle

Timer setting
Only for recording 8 programs in one month at max.

Power back-up
Built-in self-charging capacitor
Back-up duration: up to three hours at one time

– Continued on next page –

VIDEO CASSETTE RECORDER

SONY®

MICROFILM

General

Power requirements
120 V AC, 60 Hz (US, Canadian, Mexican)
110 - 240 V AC, 50/60 Hz (Chile, PX, Tourist)

Power consumption
25 W (max.)

Operating temperature
5°C to 40°C (41°F to 104°F)

Storage temperature
-20°C to 60°C (-4°F to 140°F)

Dimensions
Approx. 430 × 100 × 375 mm (w/h/d)
Approx. (17 × 4 × 14 7/8 inches) including projecting parts and controls

Weight
Approx. 5.2 kg (11 lb 7 oz)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
AC power cord (1)
Audio/video cable (3 phono to 3 phono) (1)
Cable mouse (cable box controller) (1)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

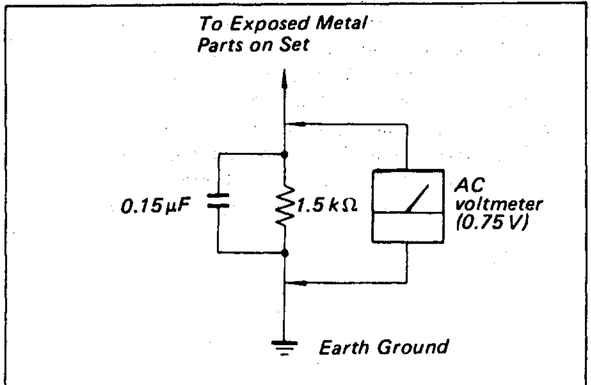

Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

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SERVICE NOTE

1. RETURNING PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP CONDITION

1) Remove the bottom panel.
2) Turn the worm gear Ⓐ of the cam motor, located at lower of the MD, to the arrow direction Ⓑ by finger.

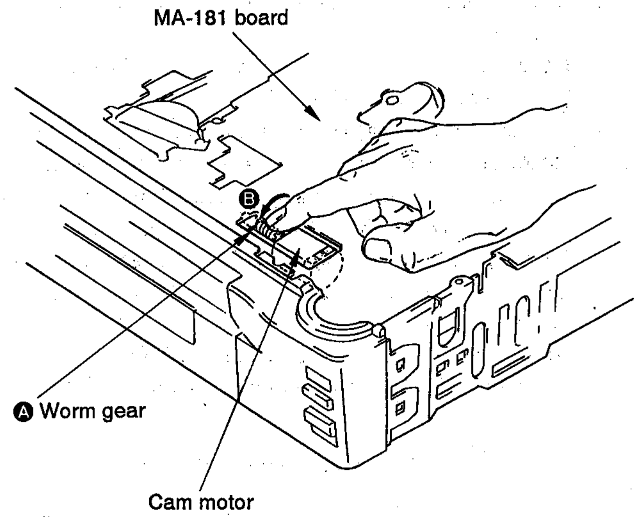

MA-181 board
Ⓑ
Ⓐ Worm gear
Cam motor

Fig. 1.

2. WINDING TAPE TO CASSETTE HALF

Turn the flywheel Ⓐ of the capstan motor to the arrow direction Ⓑ by finger, then the cassette tape will be wound to the cassette half.

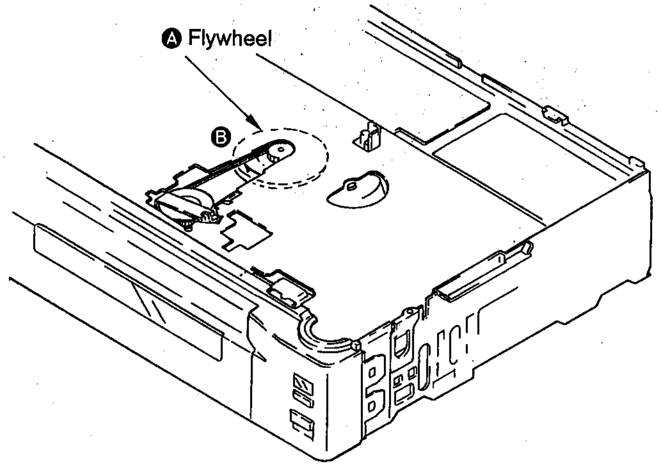


Fig. 2.

3. TAKING OUT CASSETTE WHEN UNIT IS DEFECTIVE WITH CASSETTE IN

1) Remove the upper case.
2) Turn the worm gear Ⓐ of the FL cassette compartment motor to the arrow direction Ⓑ by finger.

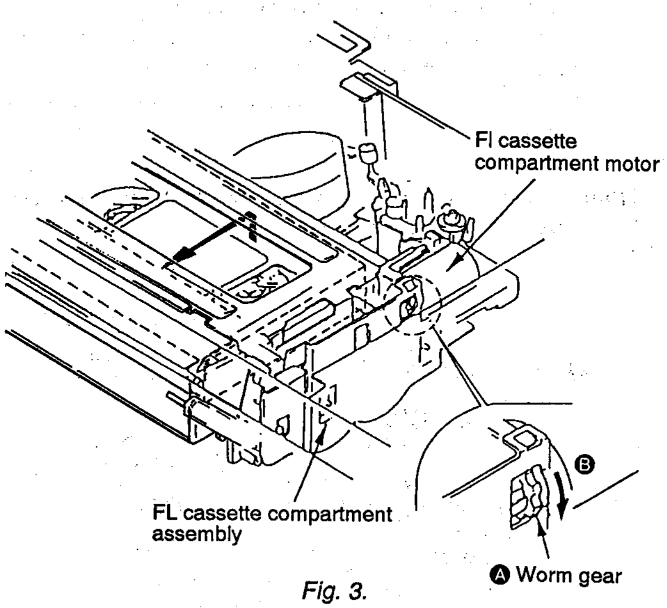

Fl cassette compartment motor
FL cassette compartment assembly
Ⓑ
Ⓐ Worm gear

Fig. 3.

> **Note:** When performing 1. to 3., be careful not to clog and damage the cassette tape.

4. UPPER DRUM REPLACEMENT

4-1. Removal of Upper Drum

1) Remove the screw ❶ (+P3 × 6) and take out the grounding shaft ❷. (See Fig. 4.)
2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows.
3) Remove two screw ❸ (PSW3 × 8) and take out the rotary upper drum in the arrow direction Ⓐ. (See Fig. 5.)
   If it difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check wheater the solders have been removed or not again.

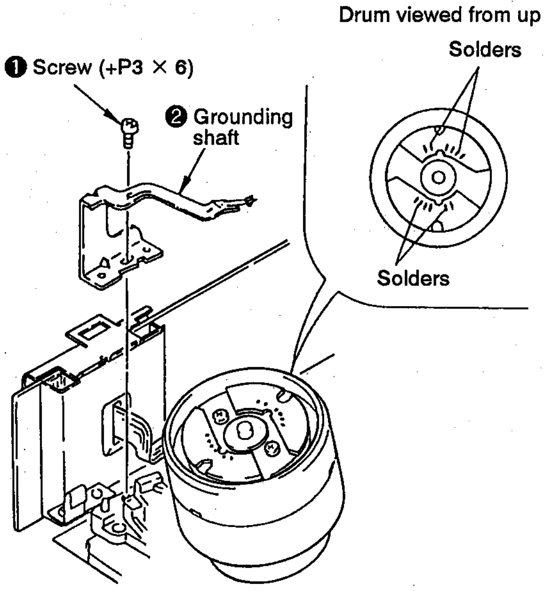

Drum viewed from up
Solders
❶ Screw (+P3 × 6)
❷ Grounding shaft
Solders

Fig. 4.

4-2. Mounting Upper Drum

1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
2) Mount the rotaly upper drum board by aligning marked ➡ with marked ⇛ of rotary transformer board (lower drum) so that the screw holes of both upper and lower drums match. (See Fig. 5.)
3) If it is difficult, mount the upper drum by shaking it gradually.
   Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.
4) Tighten two screws ❸ (PSW3 × 8). (See Fig. 5.)
   Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.
5) Solder points on the board of the rotary upper drum.
6) Fix the grounding shaft ❷ using the screw ❶ (+P3 × 6) so that the protrusin of grounding shaft end contacts the center of the drum shaft.
   Note: When attaching the grounding shaft ❷, be careful not to apply force to the spring section of it.

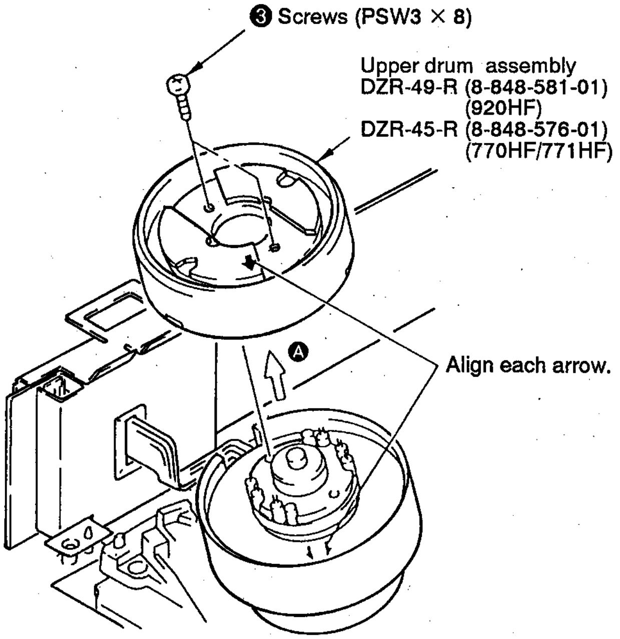

❸ Screws (PSW3 × 8)
Upper drum assembly
DZR-49-R (8-848-581-01)
(920HF)
DZR-45-R (8-848-576-01)
(770HF/771HF)
Ⓐ
Align each arrow.

Fig. 5.

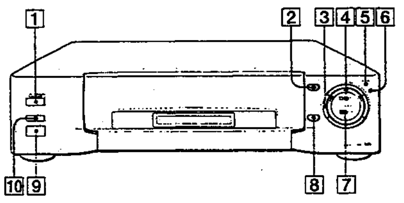
This section is extracted from SLV-920HF instruction manual.

SECTION 1
GENERAL

Index to parts and controls

Refer to the pages indicated in ( ) for details.

Front panel, with cover closed



1 POWER switch/indicator

2 ◄◄◄ HI-SPEED REWIND button (34)

3 DUAL MODE SHUTTLE ring (34)

4 ▷ PLAY button (34)

5 TIMER (recording) indicator (38)

6 REC (recording) indicator

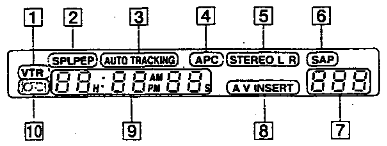
7 ■ STOP button (34)

8 ▮▮ PAUSE button (34)

9 Remote sensor (6)

10 ≙ EJECT button (34)

Display window



1 VTR indicator (39)

2 Tape speed indicators (38)

3 AUTO TRACKING indicator (49)

4 APC indicator (49)

5 Sound indicators (35)

6 SAP indicator (40)

7 Line/channel indicator

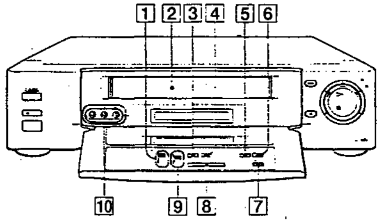
8 A V INSERT indicator (53)

9 Linear time counter/clock (22, 41)

10 Tape indicator

Index to parts and controls
(continued)

Front panel, with cover opened



1 COMMAND MODE switch (6)

2 Tape compartment

3 TV/VTR button (39)

4 INPUT SELECT button (24)

5 APC (Adaptive Picture Control) indicator (49)

6 QUICK TIMER button (38)

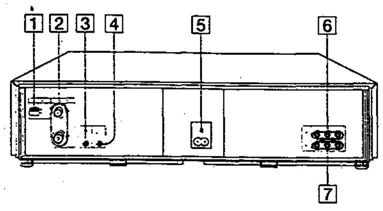
7 ● REC (recording) button (37)

8 CHANNEL buttons (25)

9 EDIT switch (56)

10 LINE IN 2 VIDEO/AUDIO jacks (51)

Rear panel



1 RF UNIT switch (57)

2 VHF/UHF connectors (10, 12, 14, 16, 18)

3 CONTROL S IN jack (55)

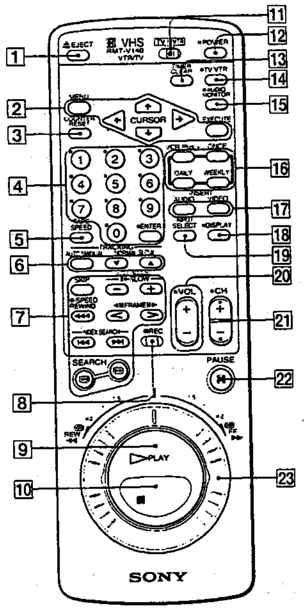
4 CABLE BOX CONTROL jack (12)

5 AC IN connector

6 LINE IN 1 AUDIO/VIDEO jacks

7 LINE OUT AUDIO/VIDEO jacks (9)

Remote commander


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
EJECT
VHS
RMT-V140
VTR/TV
POWER
TIMER CLEAR
TV/VTR
AUDIO MONITOR
MENU
COUNTER RESET
CURSOR
EXECUTE
TAPE SPEED
ENTER
INPUT SELECT
DISPLAY
AUDIO
VIDEO
INSERT
DAILY
WEEKLY
ONCE
TRACKING
SKIP
SLOW
FRAME
VOL
CH
REC
SEARCH
PAUSE
PLAY
SONY

1 ≜ EJECT button (34)

2 Menu operation buttons (21)
  MENU button
  CURSOR ↑/↓/←/→ buttons
  EXECUTE button

3 COUNTER RESET button (35)

4 Number buttons and ENTER button (25)

5 TAPE SPEED button (35)

6 TRACKING buttons (49)
  ▼/▲ NORMAL SLOW (STILL ADJUST) buttons
  AUTO/MANUAL button

7 Tape transport buttons
  I► SLOW buttons (48)
  SKIP button (48)
  ◄II/II► FRAME buttons (48)
  ◄◄◄ HI-SPEED REWIND button (34)
  I◄◄/►►I INDEX SEARCH buttons (50)
  ⊖/⊕ SEARCH buttons (34)

8 ● REC (recording) button (37)

9 ▷ PLAY button (34)

10 ■ STOP button (34)

11 TV/VTR remote control switch (6)

12 POWER switch

13 TIMER CLEAR button (46)

14 TV/VTR button (39)

15 AUDIO MONITOR button (40)

16 VCR Plus+ buttons (44)
  VCR Plus+ button
  ONCE button
  DAILY button
  WEEKLY button

17 INSERT buttons (53)
  AUDIO button
  VIDEO button

18 DISPLAY button (35)

19 INPUT SELECT button (24)

20 VOL (volume) button

21 CH (channel) buttons (25)

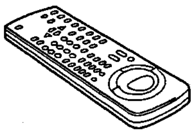
22 II PAUSE button (34)

23 DUAL MODE SHUTTLE ring (34)

Step 1: Unpacking

Check that you have the following items:

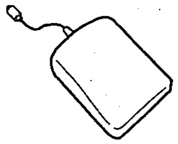
- **Remote commander**



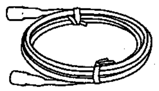
- **Size AA (R6) batteries**

- **Audio/video cable (3-phono to 3-phono)**

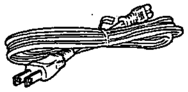
- **Cable mouse (cable box controller)**



- **75-ohm coaxial cable with F-type connectors**



- **AC power cord**

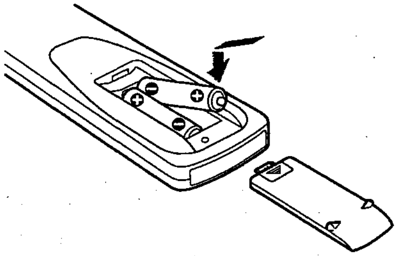


Step 2: Setting up the remote commander

Notes
- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

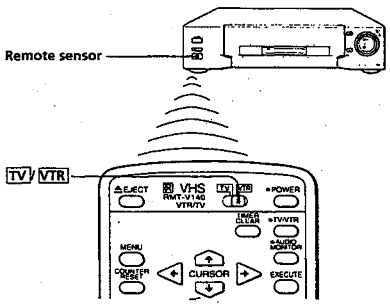
Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. To operate the VCR, set the COMMAND MODE switch on the VCR to VTR 3. Buttons on the remote commander marked with a dot (•) can be used to operate your TV.



To operate	Set TV / VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Notes
- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries in the remote commander, the code number automatically resets to 1 (Sony). Reset the appropriate code number.

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VTR on the top of the remote commander to TV.
2 Press and hold down EXECUTE, and then enter your TV's code number(s) using the number buttons. Press the ENTER button. Then release EXECUTE.
Code numbers are listed below.
Now you can use the buttons marked with a dot (•) to control your TV. To control the VCR, reset TV/VTR to VTR.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number	Manufacturer	Code number
Sony	1	Philco	3, 4
Akai	4	Philips	8
AOC	4	Pioneer	16
Centurion	12	Portland	3
Coronado	3	Quasar	6
Curtis-Mathes	12	Radio Shack	5, 14
Daytron	12	RCA	4, 10
Fisher	11	Sampo	12
General Electric	6, 10	Sanyo	11
Hitachi	2, 3	Scott	12
J. C. Penney	4, 12	Sears	7, 10, 11
JVC	9	Sharp	3, 5, 18
KMC	3	Sylvania	8, 12
Magnavox	3, 8, 12	Teknika	3, 8, 14
Marantz	4, 13	Toshiba	7
MGA/Mitsubishi	4, 12, 13, 17	Wards	3, 4, 12
NEC	4, 12	Yorx	12
Panasonic	6	Zenith	15

Step 3: Hookups

Caution
Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Selecting the best hookup option

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up and set up your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many ways in which your TV can be hooked up. For these reasons, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	Audio/video (A/V) hookup, then follow one of the hookups below.	Page 9
Cable TV with cable box	Hookup 1	Page 10
Cable TV without cable box	Hookup 2	Page 12
Antenna only, no cable TV	Hookup 3	Page 14

After you've completed the connections, follow the instructions for setup including VCR Plus+ setup. During setup, if you need more details of the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

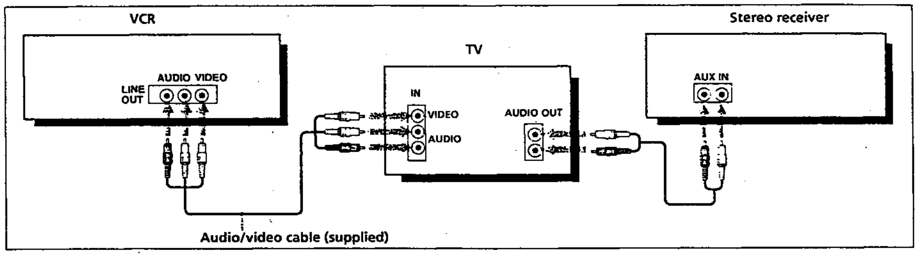
Before you get started
- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

Audio/video (A/V) hookup

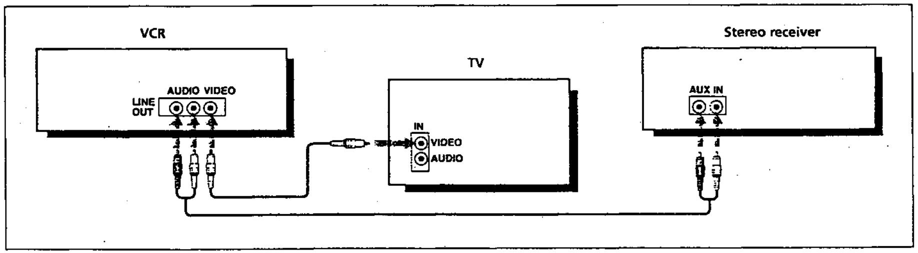
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If you're planning to use your VCR only to play back pictures and movies, you're finished setting up the VCR after you've made these connections. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks



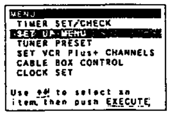
B Use this hookup if your TV doesn't have stereo jacks



A/V hookup: VCR setup

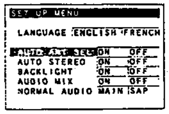
After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.

Press MENU and select SET UP MENU.



Use ⇕ to select an item then push EXECUTE

Set AUTO ANT SEL to OFF and press EXECUTE.



LANGUAGE ENGLISH FRENCH
AUTO ANT SEL ON OFF
AUTO STEREO ON OFF
BACKLIGHT ON OFF
AUDIO MIX ON OFF
NORMAL AUDIO MAIN SAP

For details, see page 33.

Hookup 1

Using cable box control

Recommended use

This hookup is recommended for most cable systems with cable boxes. It allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. You should use this hookup if you have a cable box, especially if your cable system scrambles all or most channels. A list of compatible cable boxes is on page **28**.

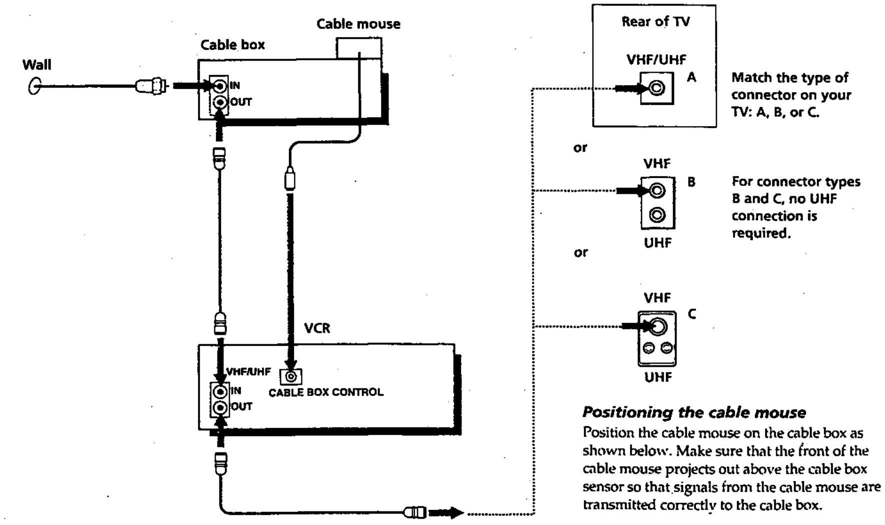
What you can and can't do with this hookup

What you can do

- Record any channel by using the VCR's cable box control feature to select channels on the cable box

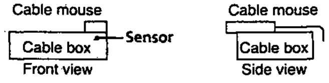
What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel


Wall
Cable box
Cable mouse
IN
OUT
VCR
VHF/UHF
IN
OUT
CABLE BOX CONTROL
Rear of TV
VHF/UHF
A
Match the type of connector on your TV: A, B, or C.
or
VHF
B
UHF
For connector types B and C, no UHF connection is required.
or
VHF
C
UHF

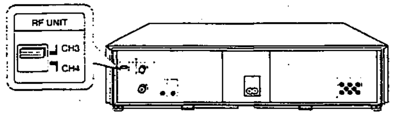
Positioning the cable mouse

Position the cable mouse on the cable box as shown below. Make sure that the front of the cable mouse projects out above the cable box sensor so that signals from the cable mouse are transmitted correctly to the cable box.


Cable mouse
Cable box
Sensor
Front view
Cable mouse
Cable box
Side view

Hookup 1: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.


RF UNIT
CH3
CH4

For details, see page 57.

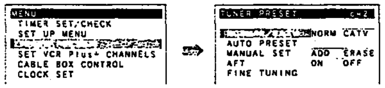
2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page **21**.

3 Turn on your cable box.

4 Set NORMAL/CATV to CATV:

Press MENU and select TUNER PRESET.

Set NORMAL/CATV to CATV and press EXECUTE.


MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING

For details, see page 24.

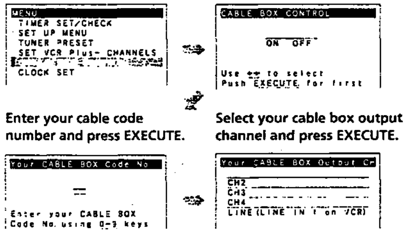
5 Set CABLE BOX CONTROL to ON:

Press MENU and select CABLE BOX CONTROL.

Select ON and press EXECUTE.

Enter your cable code number and press EXECUTE.

Select your cable box output channel and press EXECUTE.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
CABLE BOX CONTROL
ON OFF
Use ◄► to select
Push EXECUTE for first
Your CABLE BOX Code No
Enter your CABLE BOX
Code No. using 0-9 keys
Your CABLE BOX Output Ch
CH2
CH3
CH4
LINE (LINE IN 1 on VCR)

For details, see page 27.

If your cable box is not compatible

Check with your cable company to see if they can provide a compatible box. If not, use Hookup 2 (or 5, if you have only a few scrambled channels) or Hookup 4 (if you have many scrambled channels).

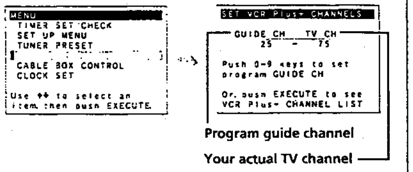
Hookup 1: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the channel you use on your TV.


MENU
TIMER SET CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ▲▼ to select an
item, then push EXECUTE.
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 - 75
Push 0-9 keys to set
program GUIDE CH
Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel

For details, see page 31.

Press EXECUTE.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically. Make sure to leave the cable box on.

The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22–23**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 1) so that you can always follow the correct instructions.

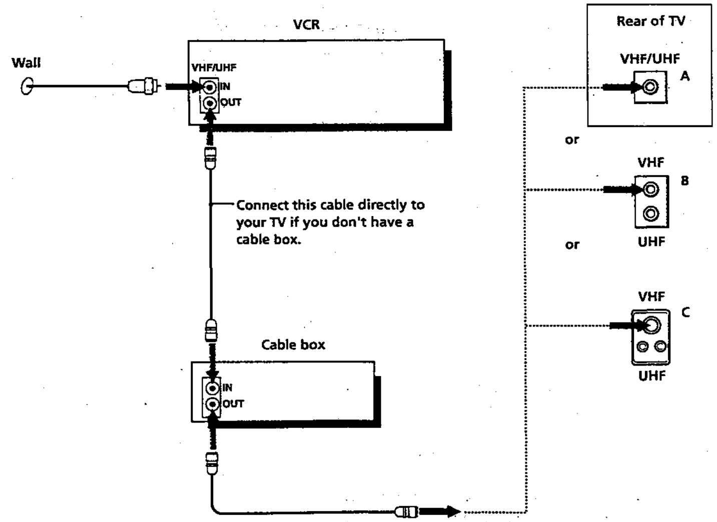
Hookup 2

No cable box
or
Incompatible cable box and few scrambled channels

Recommended use
Use this hookup if you do not have a cable box. Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles only a few channels.

What you can and can't do with this hookup
What you can do
- Record any unscrambled channel

What you can't do
- Record scrambled channels that require a cable box

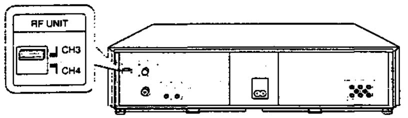

Wall
VCR
VHF/UHF
IN
OUT
Connect this cable directly to your TV if you don't have a cable box.
Cable box
IN
OUT
Rear of TV
VHF/UHF
A
or
VHF
B
UHF
or
VHF
C
UHF

Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

Hookup 2: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page 9), you can skip this step.


RF UNIT
CH3
CH4

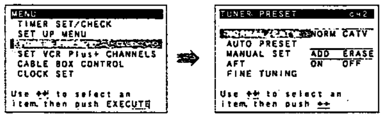
For details, see page 57.

2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page 21.

3 Set NORMAL/CATV to CATV:

Press MENU and select TUNER PRESET.

Set NORMAL/CATV to CATV and press EXECUTE.

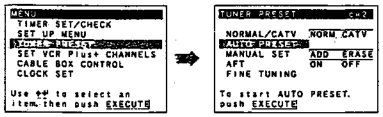

MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
Use ♦♦ to select an item, then push EXECUTE
TUNER PRESET CH2
NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ♦♦ to select an item, then push ♦♦

For details, see page 24.

4 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

Select AUTO PRESET and press EXECUTE.


MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
Use ♦♦ to select an item, then push EXECUTE
TUNER PRESET CH2
NORMAL/CATV NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
To start AUTO PRESET, push EXECUTE

For details, see page 24.

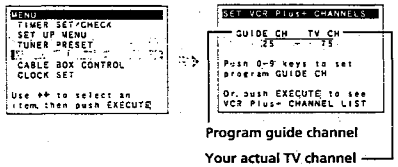
Hookup 2: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the channel you use on your TV.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ♦♦ to select an item, then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 – 75
Push 0–9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel

Press EXECUTE.

For details, see page 31.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically.

The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 22–23.

You are now ready to use your VCR

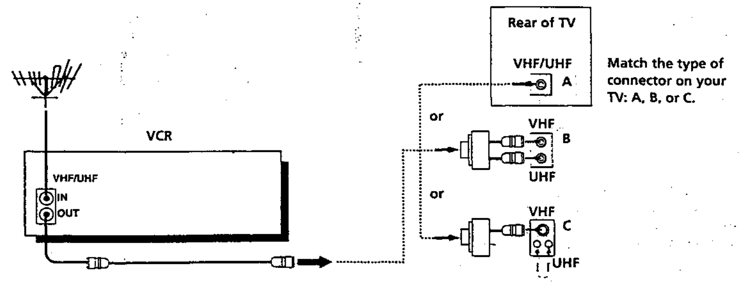
A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 2) so that you can always follow the correct instructions.

Hookup 3

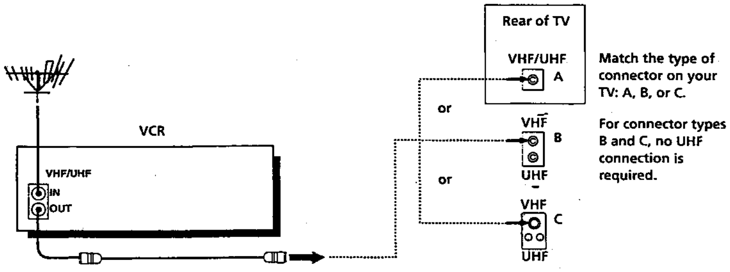
Antenna hookup

Make the following connections if you're using an antenna (if you don't have cable TV).

A Use this hookup if you're using:
- VHF/UHF antenna (you get channels 2-13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- separate VHF and UHF antennas



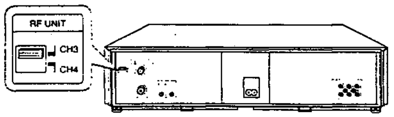
B Use this hookup if you're using a VHF-only antenna (you get channels 2-13 only)


VCR
VHF/UHF
IN
OUT
Rear of TV
VHF/UHF
A
or
VHF
B
UHF
or
VHF
C
UHF
Match the type of connector on your TV: A, B, or C.
For connector types B and C, no UHF connection is required.

If you cannot connect your antenna cable to the VCR directly
If your antenna cable is a flat cable (300-ohm twin lead cable), attach the external antenna connector (not supplied) so that you can connect the cable to the VHF/UHF IN jack. If you have separate cables for VHF and UHF antennas, you may use a U/V band mixer. For details, see page **57**.

Hookup 3: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



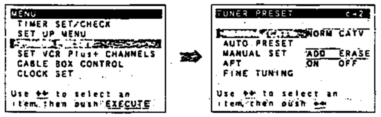
For details, see page 57.

2 (*Canadian model only*) Set the on-screen display language to French if desired. For details, see page **21**.

3 Set NORMAL/CATV to NORM:

Press MENU and select TUNER PRESET.

Set NORMAL/CATV to NORM and press EXECUTE.



```
MENU
 TIMER SET/CHECK
 SET UP MENU
 
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item, then push EXECUTE
```

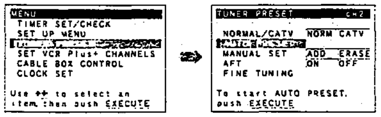
```
TUNER PRESET                c-2
                  NORM  CATV
 AUTO PRESET
 MANUAL SET       ADD   ERASE
 AFT              ON    OFF
 FINE TUNING

Use ↑↓ to select an
item, then push ←→
```

For details, see page 24.

4 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

Select AUTO PRESET and press EXECUTE.



```
MENU
 TIMER SET/CHECK
 SET UP MENU
 
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item, then push EXECUTE
```

```
TUNER PRESET                CH2
 NORMAL/CATV      NORM  CATV
 
 MANUAL SET       ADD   ERASE
 AFT              ON    OFF
 FINE TUNING

To start AUTO PRESET,
push EXECUTE
```

For details, see page 24.

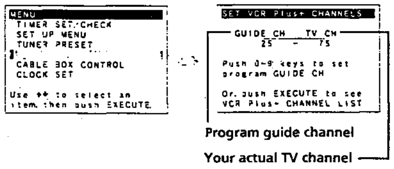
Hookup 3: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the channel you use on your TV.



```
MENU
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item, then push EXECUTE
```

```
SET VCR Plus+ CHANNELS
 GUIDE CH    TV CH
   25    -    75

Push 0-9 keys to set
program GUIDE CH

Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

Program guide channel

Your actual TV channel

For details, see page 31.

Press EXECUTE.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically.

The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22-23**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 3) so that you can always follow the correct instructions.

Hookup 4

Incompatible cable box and many scrambled channels

Recommended use

Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all, or most channels.

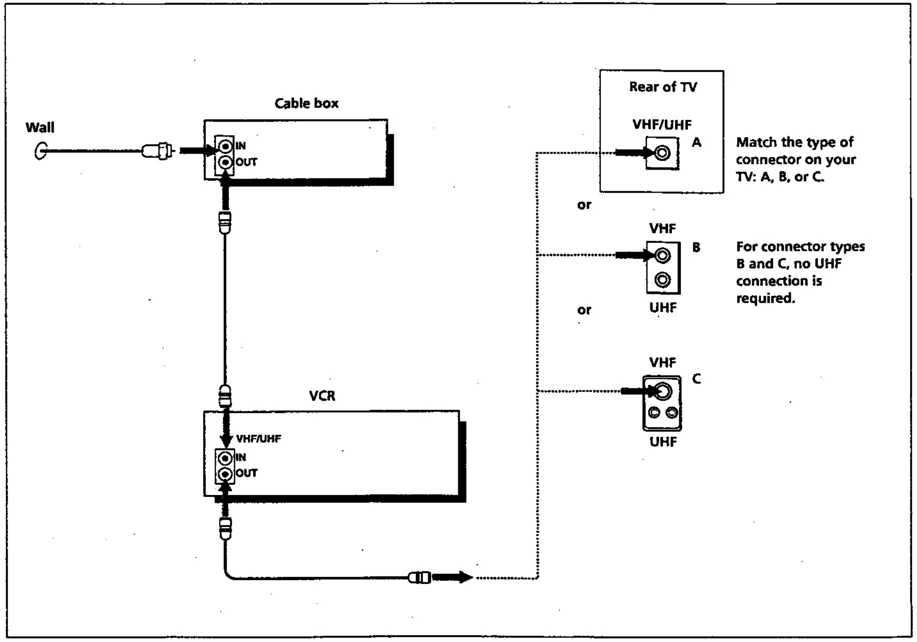
What you can and can't do with this hookup

What you can do

- Record any channel by selecting the channel on the cable box

What you can't do

- Record with the cable box turned off
- Record by selecting channels directly with the VCR
- Record one channel while watching another channel

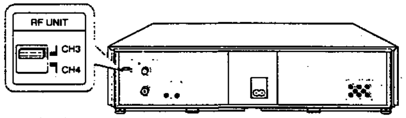

Wall
Cable box
IN
OUT
VCR
VHF/UHF
IN
OUT
Rear of TV
VHF/UHF
A
or
VHF
B
UHF
or
VHF
C
UHF

Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

Hookup 4: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page 9), you can skip this step.


RF UNIT
CH3
CH4

For details, see page 57.

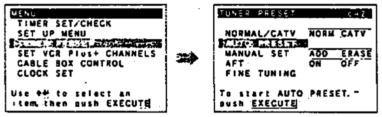
2 (*Canadian model only*) Set the on-screen display language to French if desired. For details, see page **21**.

3 Turn on your cable box.

4 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

Select AUTO PRESET and press EXECUTE.


MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
NORMAL/CATV
NORM CATV
MANUAL SET
ADD ERASE
AFT
ON OFF
FINE TUNING

Use ↑↓ to select an item then push EXECUTE

To start AUTO PRESET. push EXECUTE

For details, see page 24.

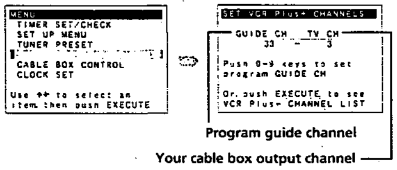
Hookup 4: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 Enter all the channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the cable box output channel.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
33 – 3
Program guide channel
Your cable box output channel

Use ↑↓ to select an item then push EXECUTE

Push 0-9 keys to set program GUIDE CH

Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

For details, see page 31.

Press EXECUTE.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 4) so that you can always follow the correct instructions.

Hookup 5

Incompatible cable box with few scrambled channels, using an A/B switch

Recommended use

By using an A/B switch, this hookup allows you to easily record both scrambled and unscrambled channels. With the A/B switch set to position "A," you can record unscrambled channels by selecting channels directly with the VCR. You only use position "B" and the cable box to record a scrambled channel.

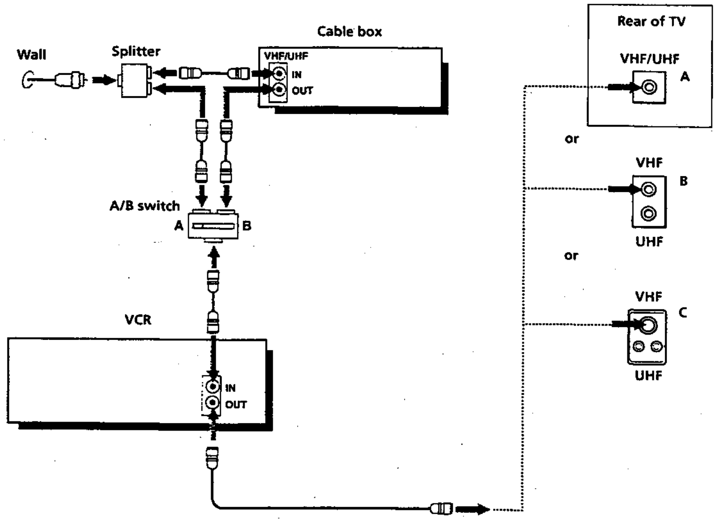
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel directly with your VCR (the A/B switch is set to "A")
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to "B")

What you can't do

- Record one channel while watching another channel

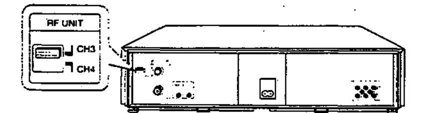

Wall
Splitter
Cable box
VHF/UHF
IN
OUT
A/B switch
A
B
VCR
IN
OUT
Rear of TV
VHF/UHF
A
or
VHF
B
UHF
or
VHF
C
UHF

Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

Hookup 5: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page 9), you can skip this step.


RF UNIT
CH3
CH4

For details, see page 57.

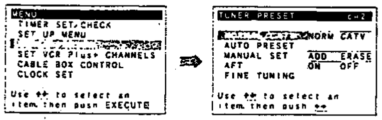
2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page 21.

3 Set the A/B switch to "A."

4 Set NORMAL/CATV to CATV:

Press MENU and select TUNER PRESET.

Set NORMAL/CATV to CATV and press EXECUTE.

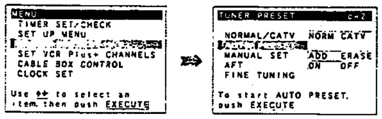

MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
Use ⇕ to select an item then push EXECUTE
TUNER PRESET CH2
NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ⇕ to select an item then push ⇔

For details, see page 24.

5 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

Select AUTO PRESET and press EXECUTE.

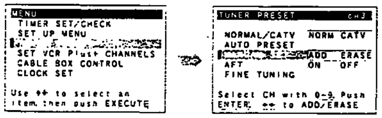

MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
Use ⇕ to select an item then push EXECUTE
TUNER PRESET CH2
NORMAL/CATV NORM CATV
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
To start AUTO PRESET, push EXECUTE

For details, see page 24.

6 Preset the cable box output channel (usually 2, 3, or 4):

Press MENU and select TUNER PRESET.

Set MANUAL SET to ADD and press EXECUTE.


MENU
TIMER SET/CHECK
SET UP MENU
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
Use ⇕ to select an item then push EXECUTE
TUNER PRESET CH3
NORMAL/CATV NORM CATV
AUTO PRESET
ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0-9. Push ENTER. ⇔ to ADD/ERASE

For details, see page 25.

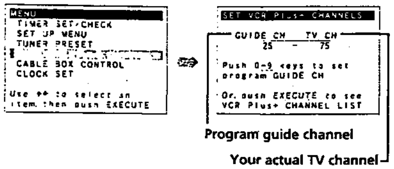
Hookup 5: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page 30.

2 For unscrambled channels, if the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the channel you use on your TV.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ⇕ to select an item then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 – 75
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel

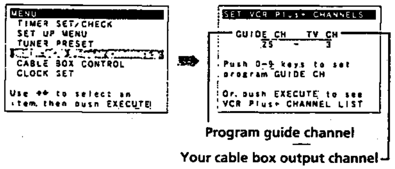
Press EXECUTE.

For details, see page 31.

3 For scrambled channels, enter all the scrambled channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the cable box output channel.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ⇕ to select an item then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 – 3
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your cable box output channel

Press EXECUTE.

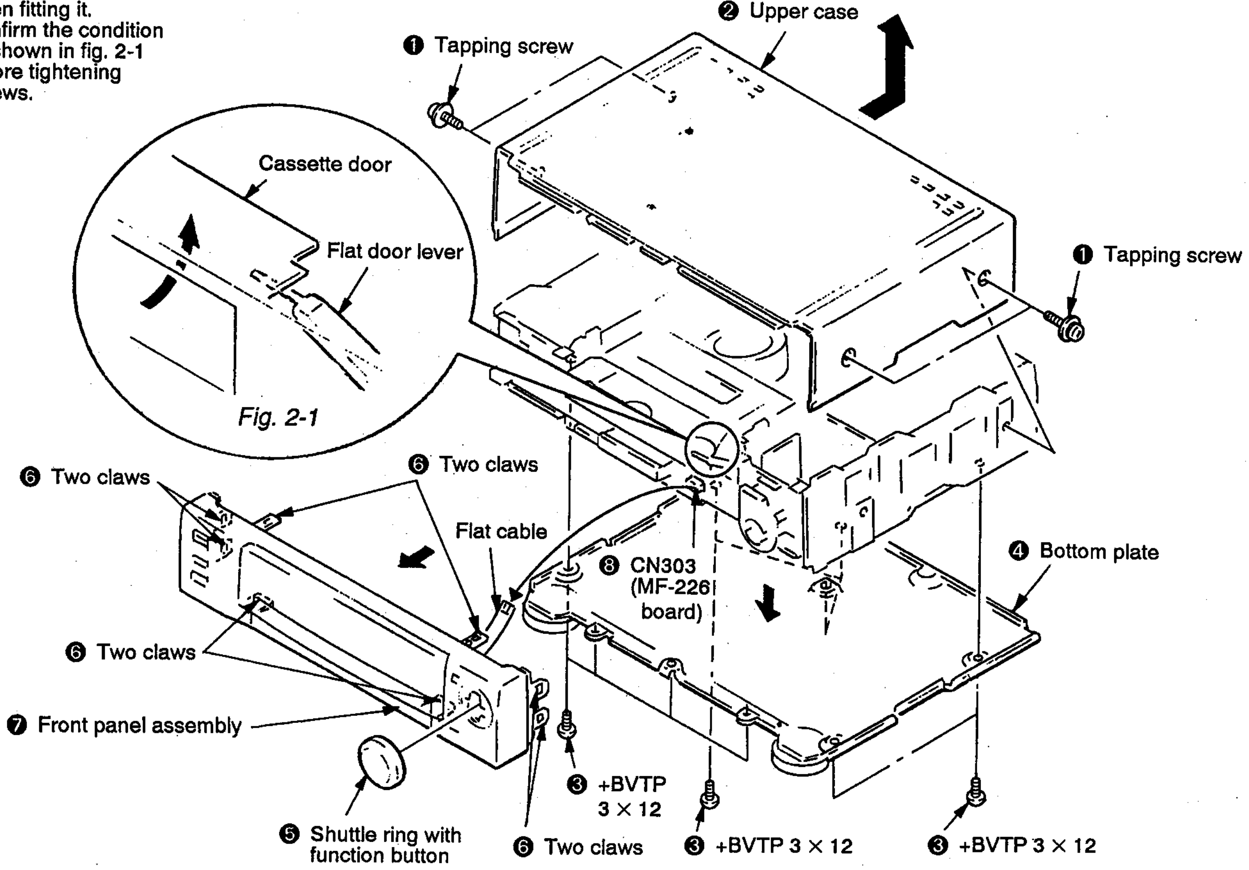
For details, see page 31.

SECTION 2
DISASSEMBLY

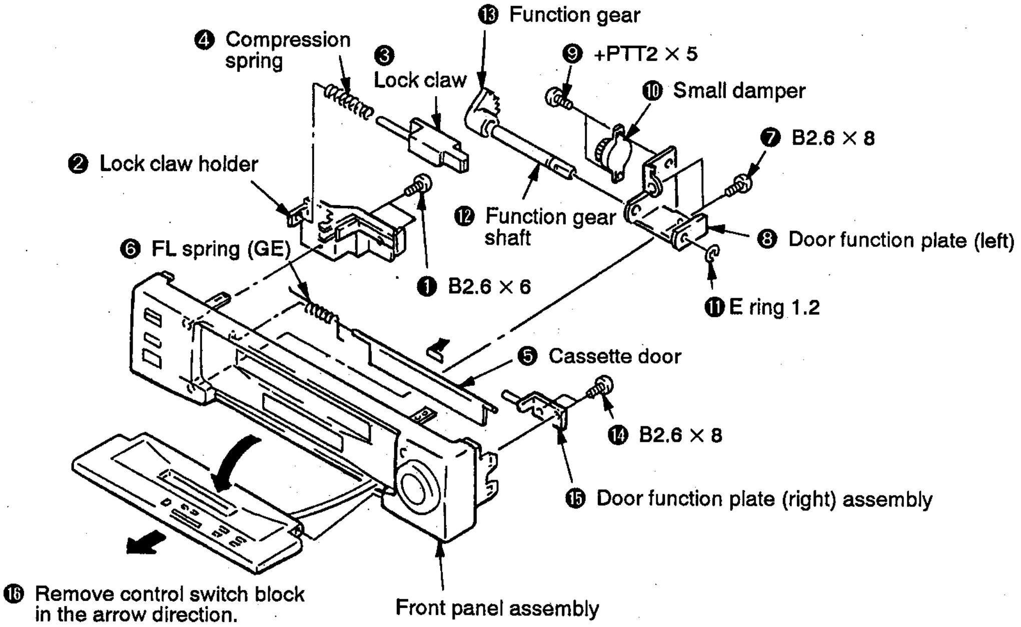
Note: Follow the disassembly procedure in the numerical order given.

2-1. FRONT PANEL ASSEMBLY AND CASE

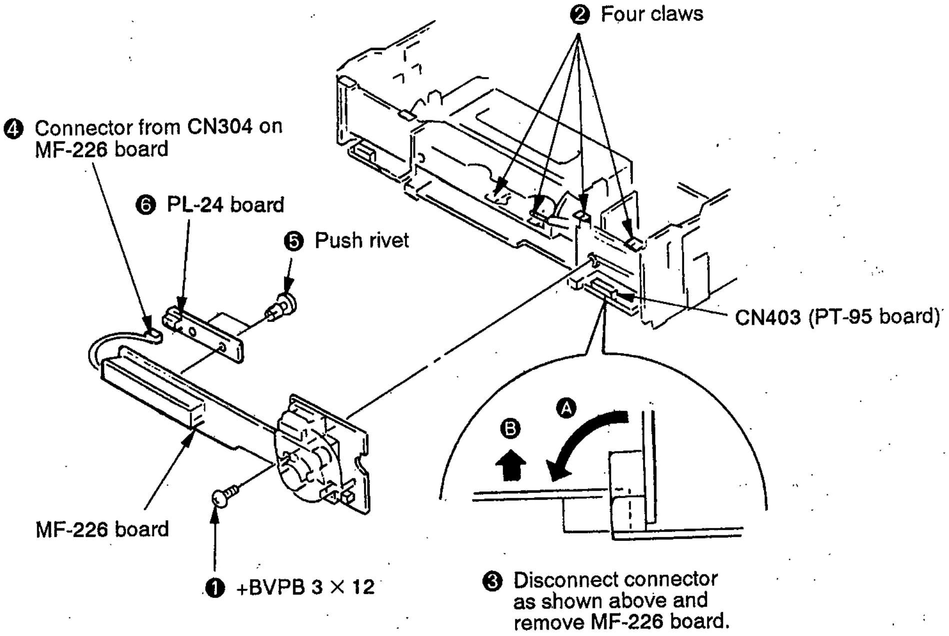
* Note on fitting front panel assembly
Be sure to open cassette door 90°
when fitting it.
- Confirm the condition as shown in fig. 2-1 before tightening screws.


❷ Upper case
❶ Tapping screw
Cassette door
Flat door lever
Fig. 2-1
❶ Tapping screw
❻ Two claws
❻ Two claws
Flat cable
❽ CN303 (MF-226 board)
❹ Bottom plate
❻ Two claws
❼ Front panel assembly
❸ +BVTP 3 × 12
❺ Shuttle ring with function button
❻ Two claws
❸ +BVTP 3 × 12
❸ +BVTP 3 × 12

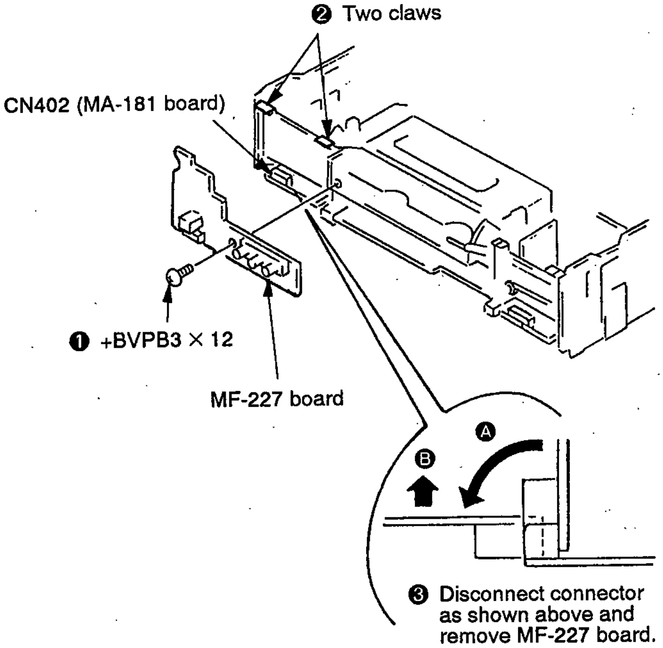
2-2. CONTROL SWITCH BLOCK


⓭ Function gear
❹ Compression spring
❸ Lock claw
❾ +PTT2 × 5
❿ Small damper
❼ B2.6 × 8
❷ Lock claw holder
⓬ Function gear shaft
❽ Door function plate (left)
❻ FL spring (GE)
❶ B2.6 × 6
⓫ E ring 1.2
❺ Cassette door
⓮ B2.6 × 8
⓯ Door function plate (right) assembly
⓰ Remove control switch block in the arrow direction.
Front panel assembly

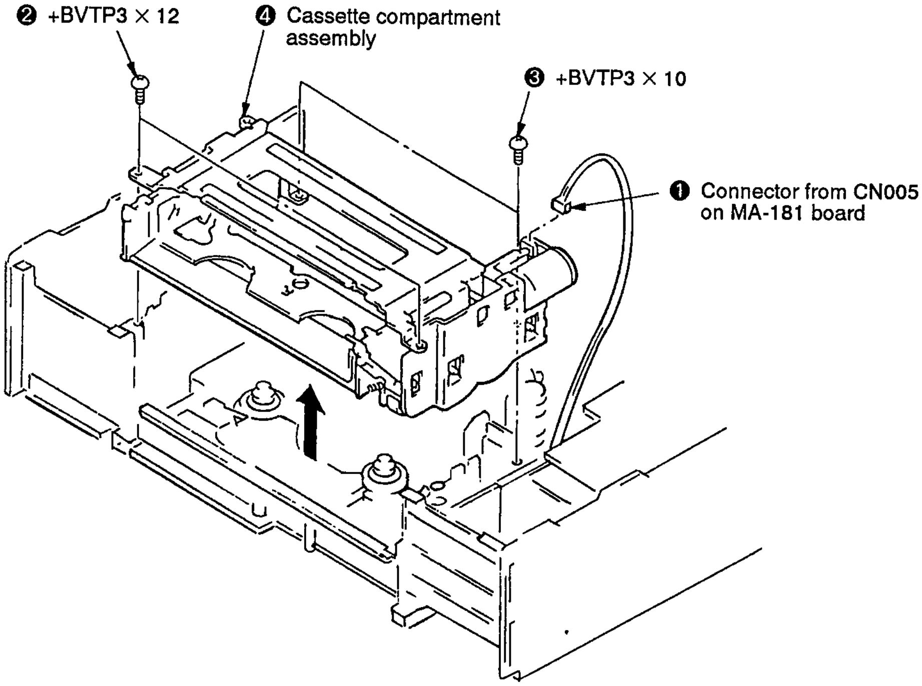
2-3. MF-226 AND PL-24 BOARDS


❷ Four claws
❹ Connector from CN304 on MF-226 board
❻ PL-24 board
❺ Push rivet
CN403 (PT-95 board)
Ⓐ
Ⓑ
MF-226 board
❶ +BVPB 3 × 12
❸ Disconnect connector as shown above and remove MF-226 board.

2-4. MF-227 BOARD

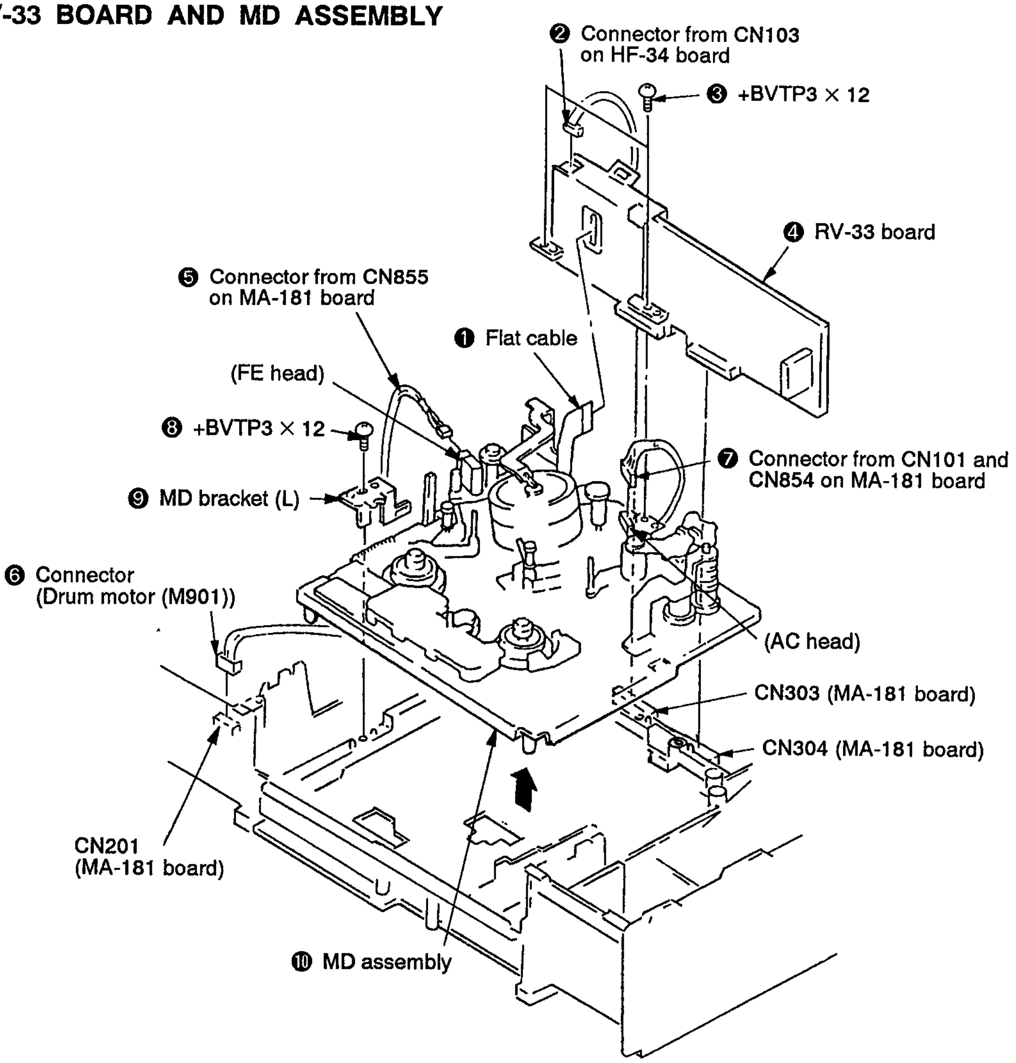

❷ Two claws
CN402 (MA-181 board)
❶ +BVPB3 × 12
MF-227 board
Ⓐ
Ⓑ
❸ Disconnect connector as shown above and remove MF-227 board.

2-5. CASSETTE COMPARTMENT ASSEMBLY



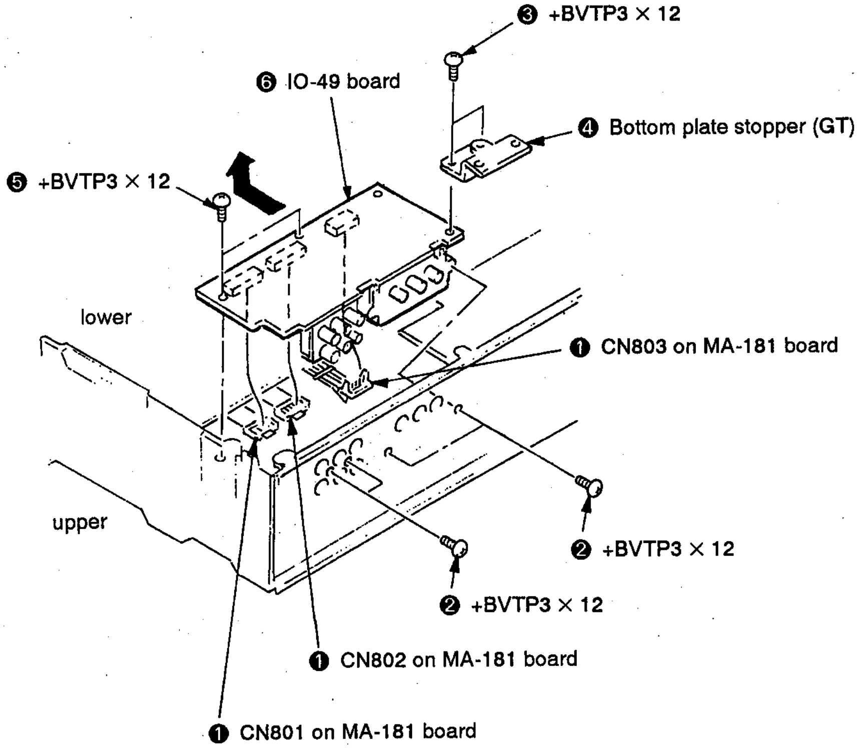
❷ +BVTP3 × 12
❹ Cassette compartment assembly
❸ +BVTP3 × 10
❶ Connector from CN005 on MA-181 board

2-6. RV-33 BOARD AND MD ASSEMBLY



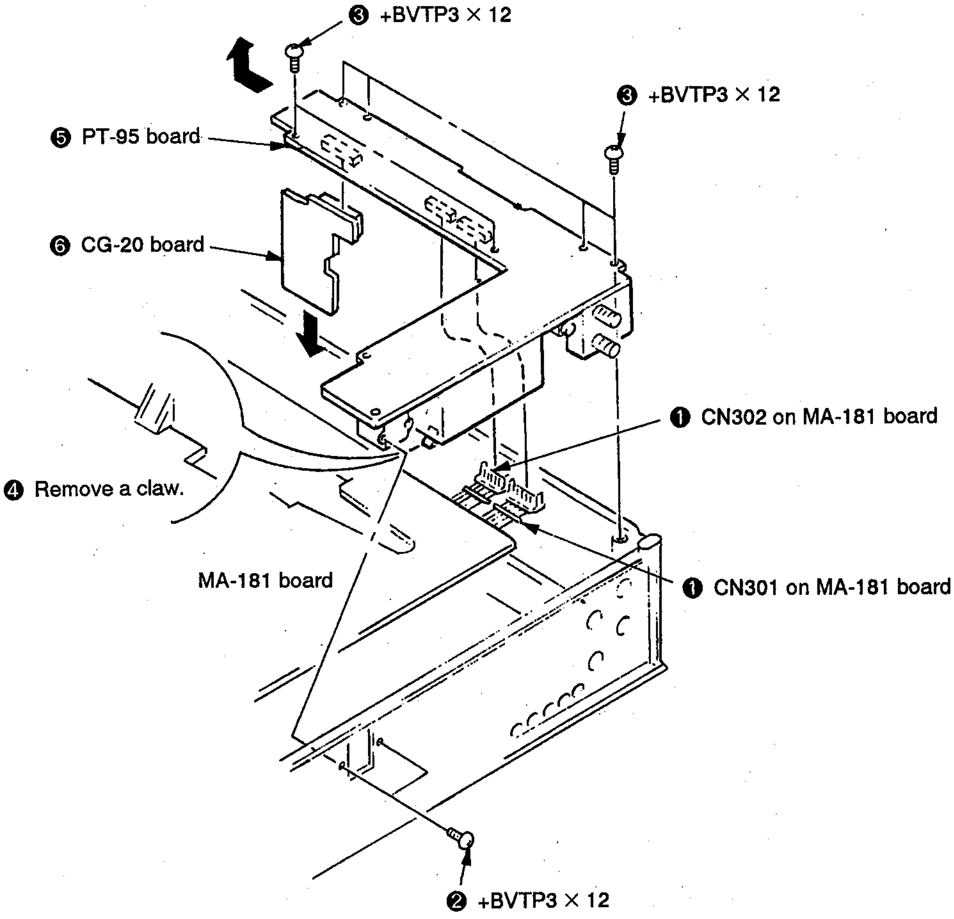
❷ Connector from CN103 on HF-34 board
❸ +BVTP3 × 12
❹ RV-33 board
❺ Connector from CN855 on MA-181 board
❶ Flat cable
(FE head)
❽ +BVTP3 × 12
❼ Connector from CN101 and CN854 on MA-181 board
❾ MD bracket (L)
❻ Connector (Drum motor (M901))
(AC head)
CN303 (MA-181 board)
CN304 (MA-181 board)
CN201 (MA-181 board)
❿ MD assembly

2-7. IO-49 BOARD



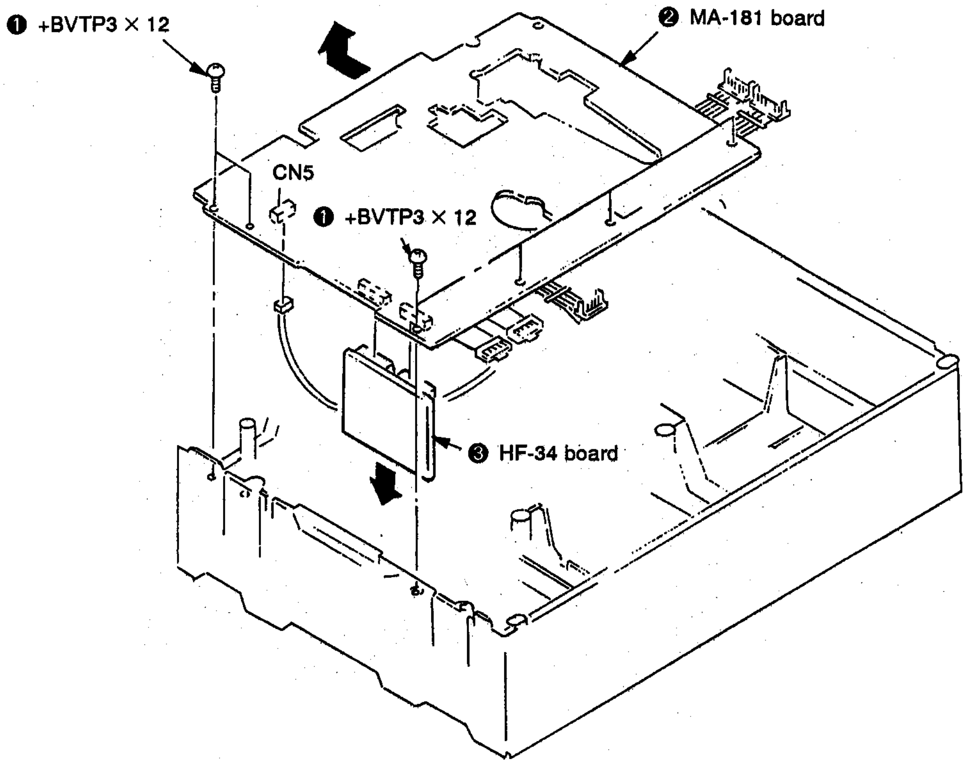
❸ +BVTP3 × 12
❻ IO-49 board
❹ Bottom plate stopper (GT)
❺ +BVTP3 × 12
lower
❶ CN803 on MA-181 board
upper
❷ +BVTP3 × 12
❷ +BVTP3 × 12
❶ CN802 on MA-181 board
❶ CN801 on MA-181 board

2-8. PT-95 AND CG-20 BOARDS



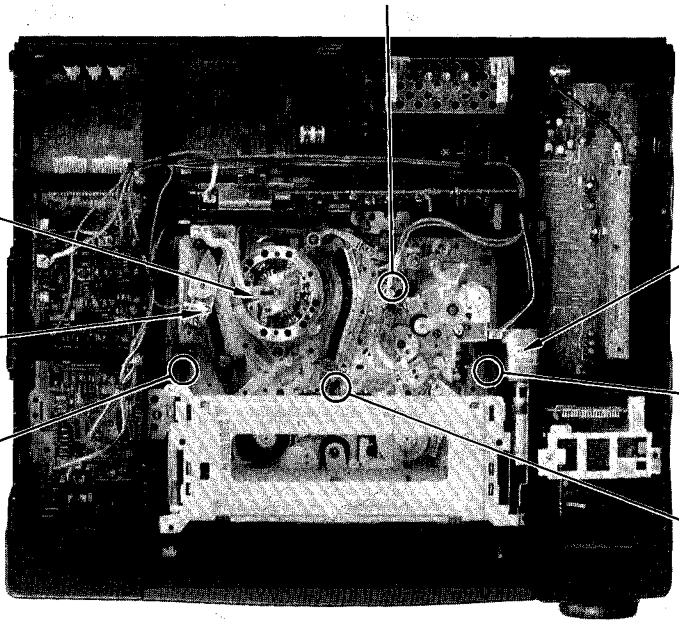
❸ +BVTP3 × 12
❸ +BVTP3 × 12
❺ PT-95 board
❻ CG-20 board
❶ CN302 on MA-181 board
❹ Remove a claw.
MA-181 board
❶ CN301 on MA-181 board
❷ +BVTP3 × 12

2-9. MA-181 AND HF-34 BOARDS


❶ +BVTP3 × 12
❷ MA-181 board
CN5
❶ +BVTP3 × 12
❸ HF-34 board

2-10. INTERNAL VIEWS

– Top Side –



ACE head block ass'y
A-6761-129-A

Drum ass'y
DZH-49A-R 8-848-580-11 (920HF)
DZH-45A-R 8-848-575-11 (770HF/771HF)
Upper drum ass'y
DZH-49-R 8-848-581-11 (920HF)
DZH-45-R 8-848-576-11 (770HF/771HF)

M904
Loading motor
X-3727-784-1

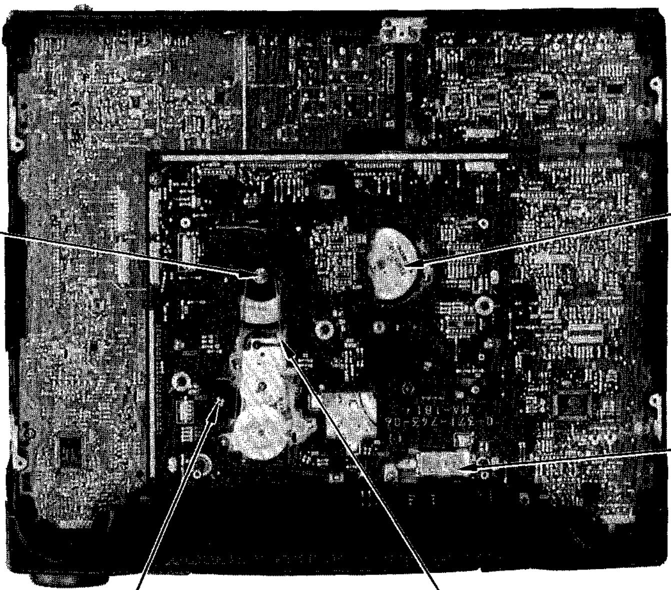
FE head
1-543-647-11

Q001
Tape top sensor
8-729-926-31

Q002
Tape end sensor
8-729-926-31

D001
Tape top/end LED
8-719-985-00

– Bottom Side –



M902
Capstan motor
8-835-489-11

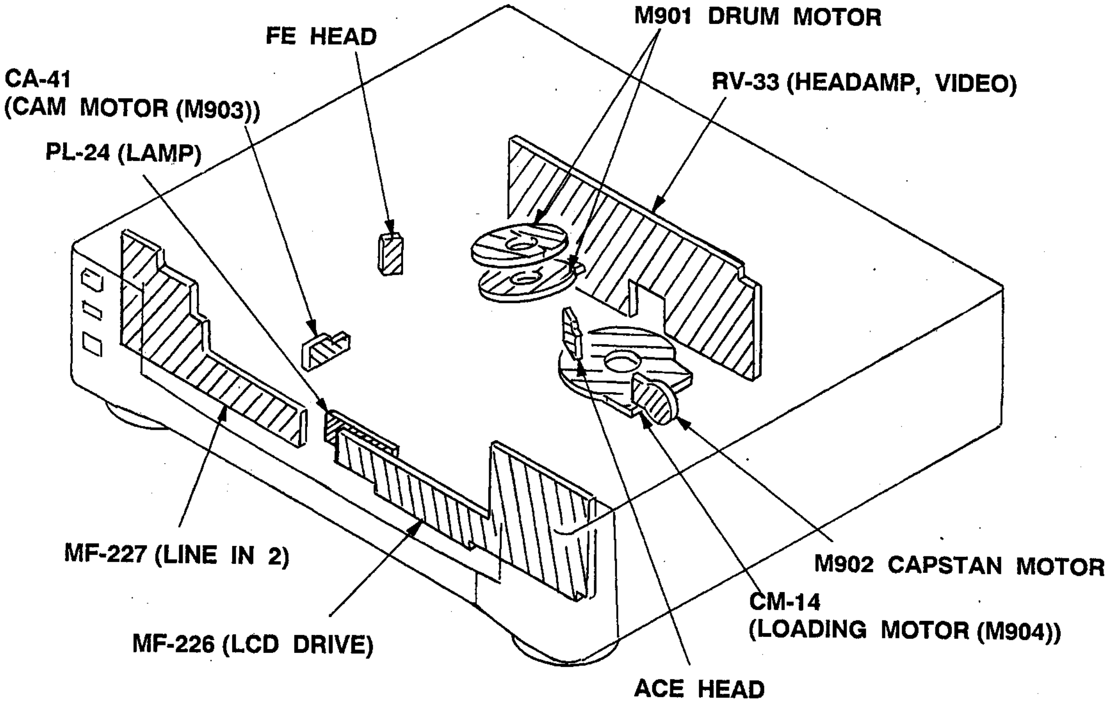
M901
Drum motor

M903
Cam motor
X-3733-302-1

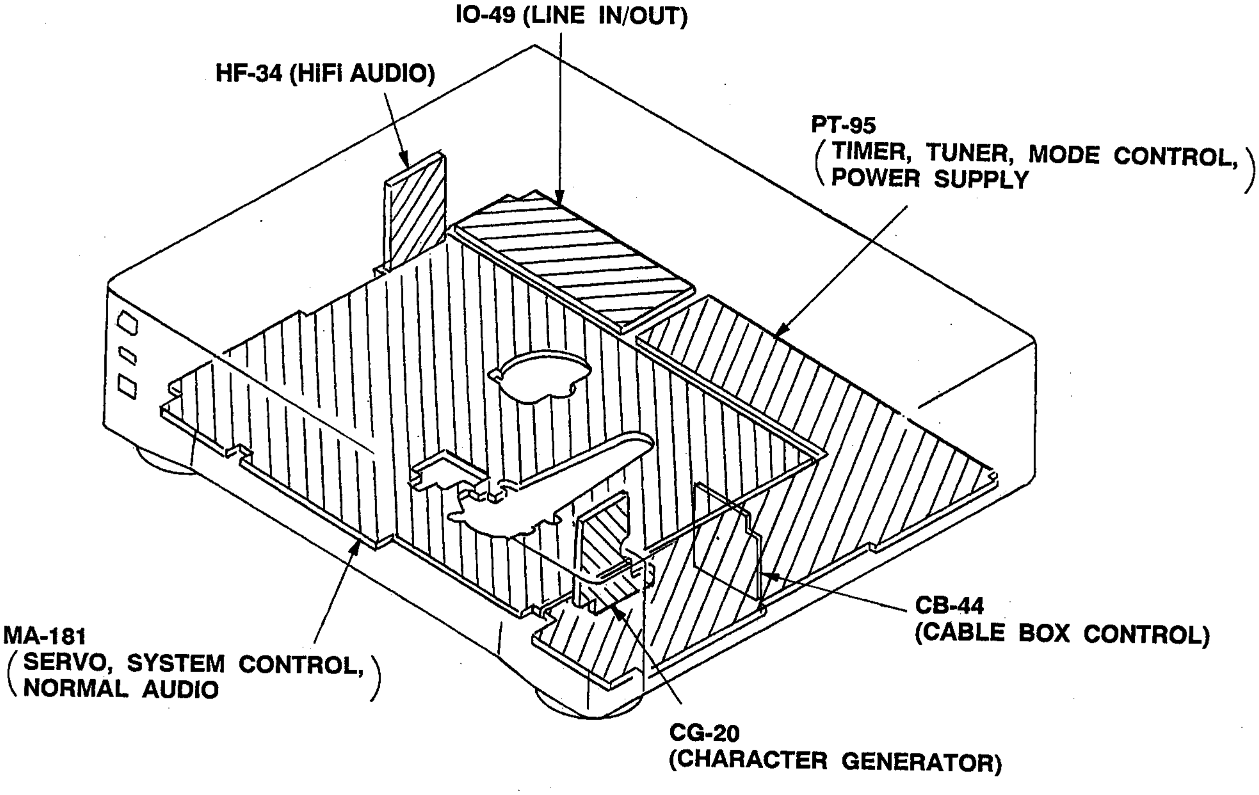
S1
Rotary switch
1-571-920-11

Timing belt
3-736-013-01

2-11. CIRCUIT BOARDS LOCATION



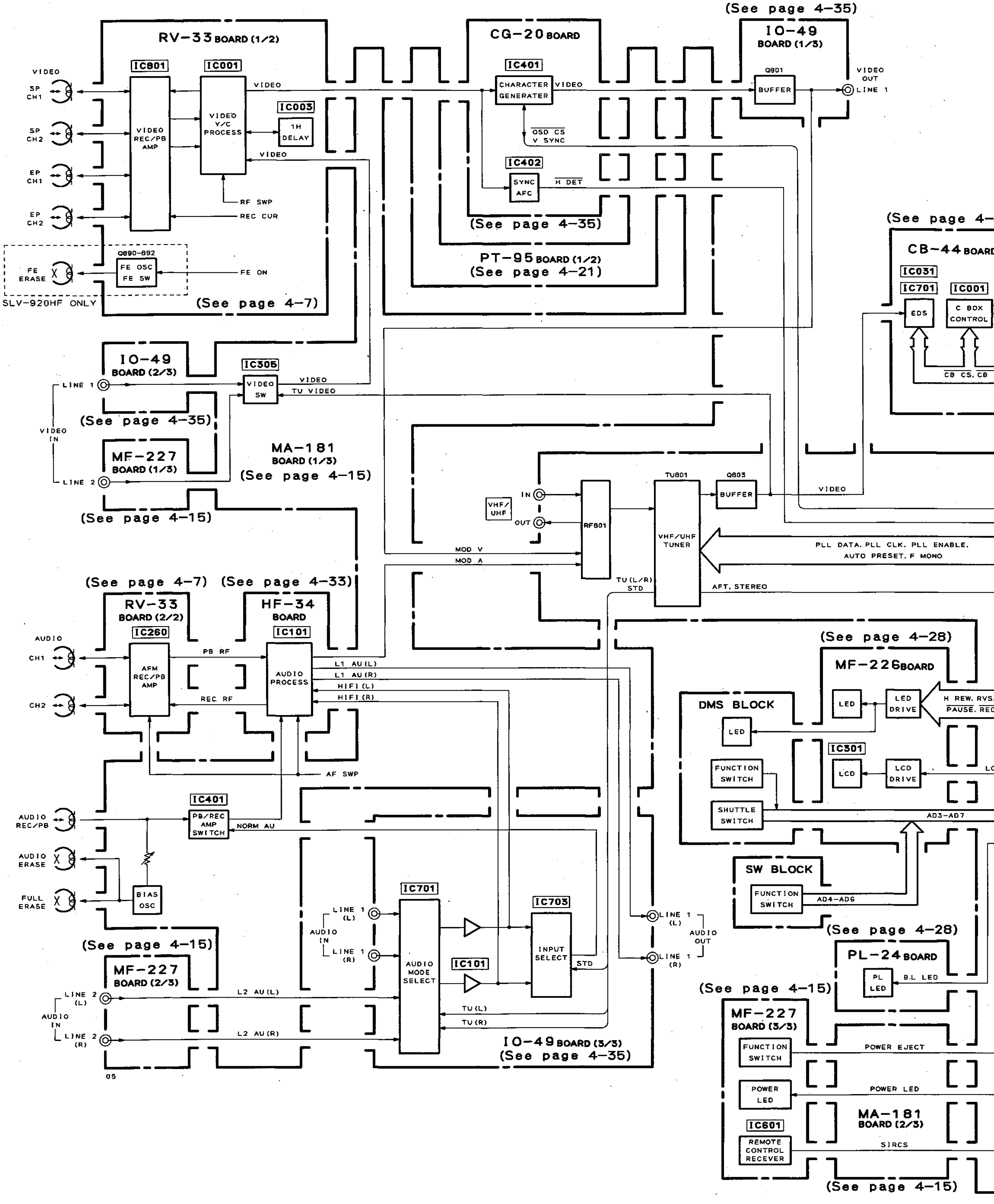
FE HEAD
M901 DRUM MOTOR
CA-41
(CAM MOTOR (M903))
RV-33 (HEADAMP, VIDEO)
PL-24 (LAMP)
MF-227 (LINE IN 2)
M902 CAPSTAN MOTOR
CM-14
(LOADING MOTOR (M904))
MF-226 (LCD DRIVE)
ACE HEAD

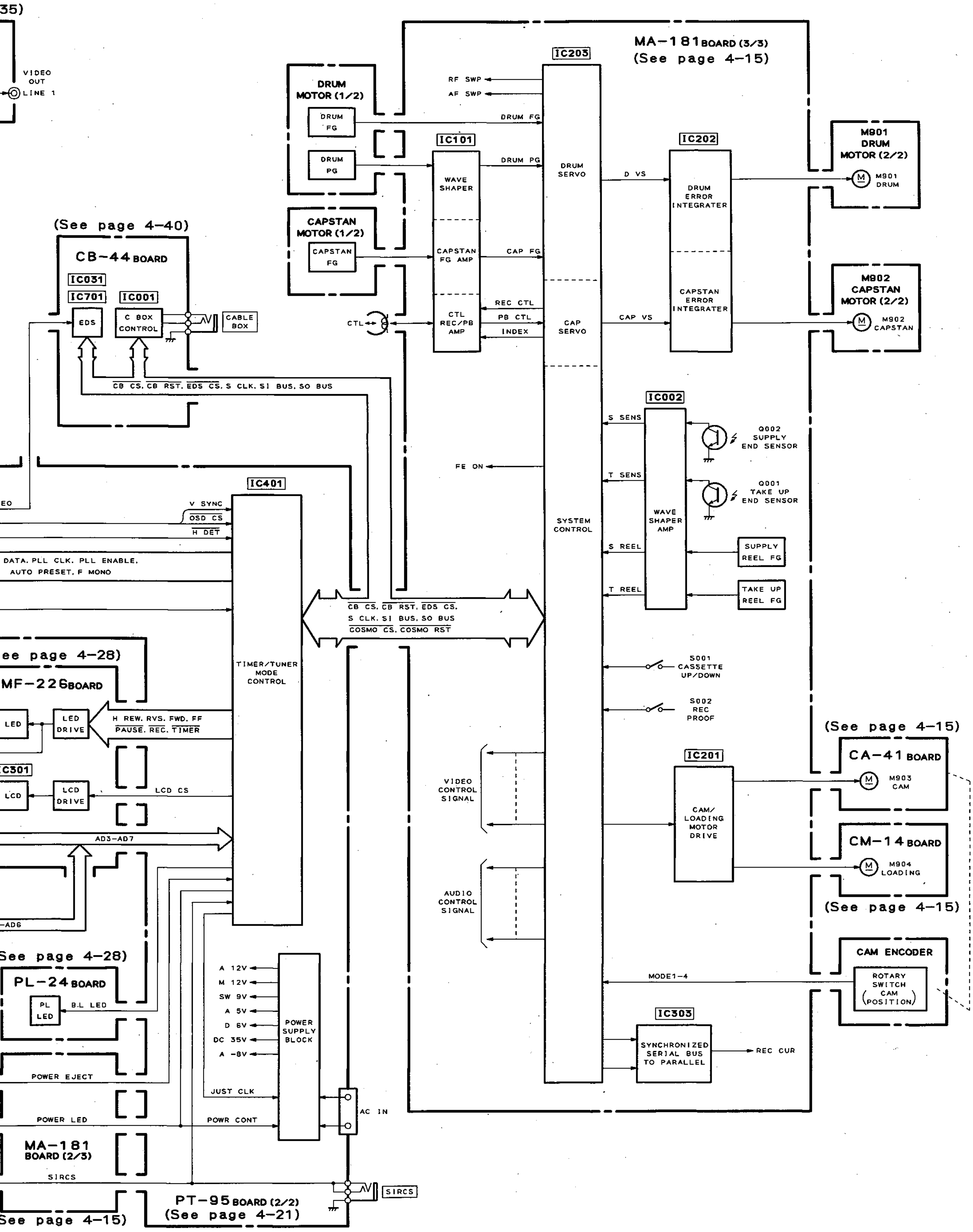


IO-49 (LINE IN/OUT)
HF-34 (HiFi AUDIO)
PT-95
(TIMER, TUNER, MODE CONTROL, POWER SUPPLY)
CB-44
(CABLE BOX CONTROL)
MA-181
(SERVO, SYSTEM CONTROL, NORMAL AUDIO)
CG-20
(CHARACTER GENERATOR)

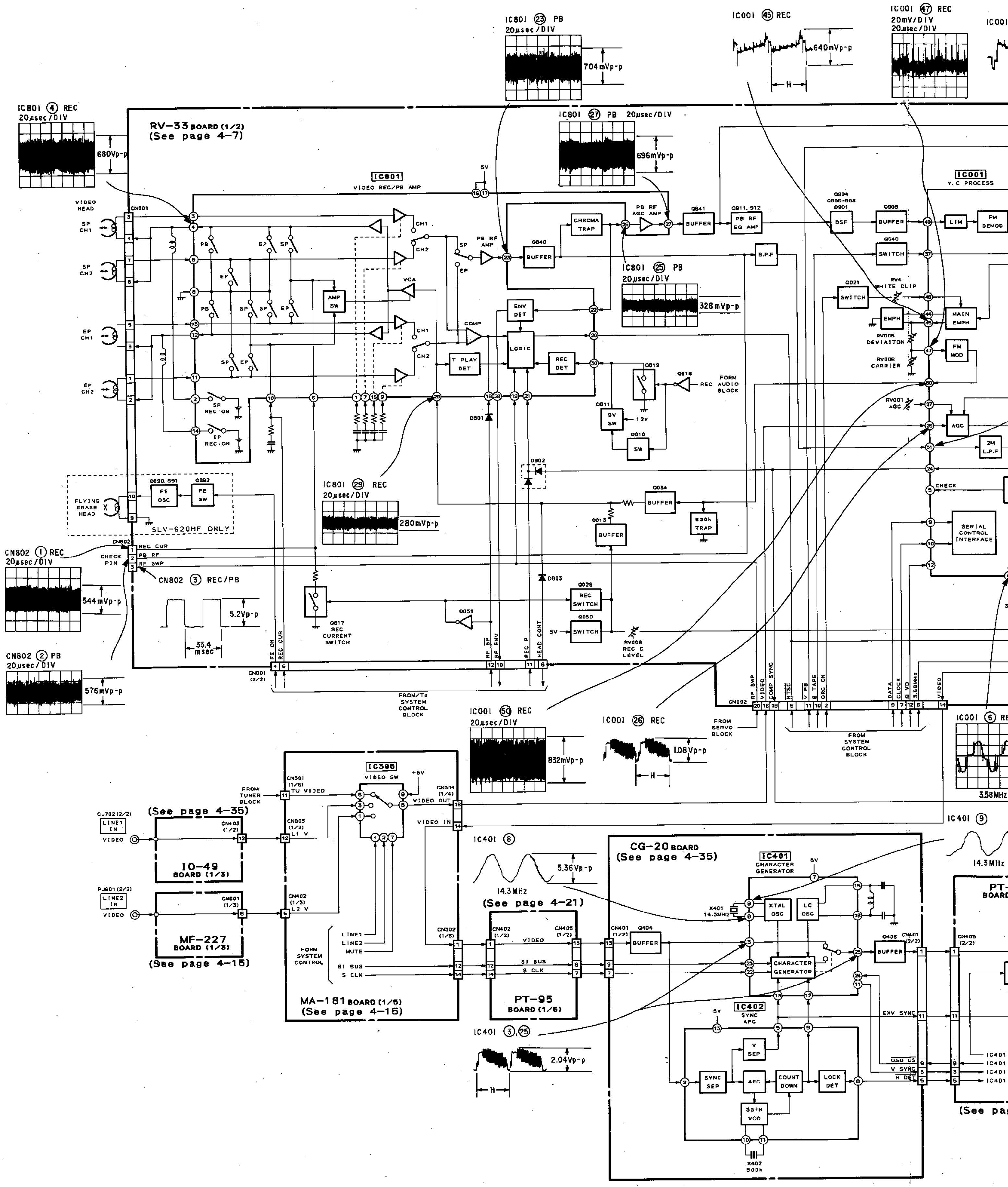
SECTION 3
BLOCK DIAGRAMS

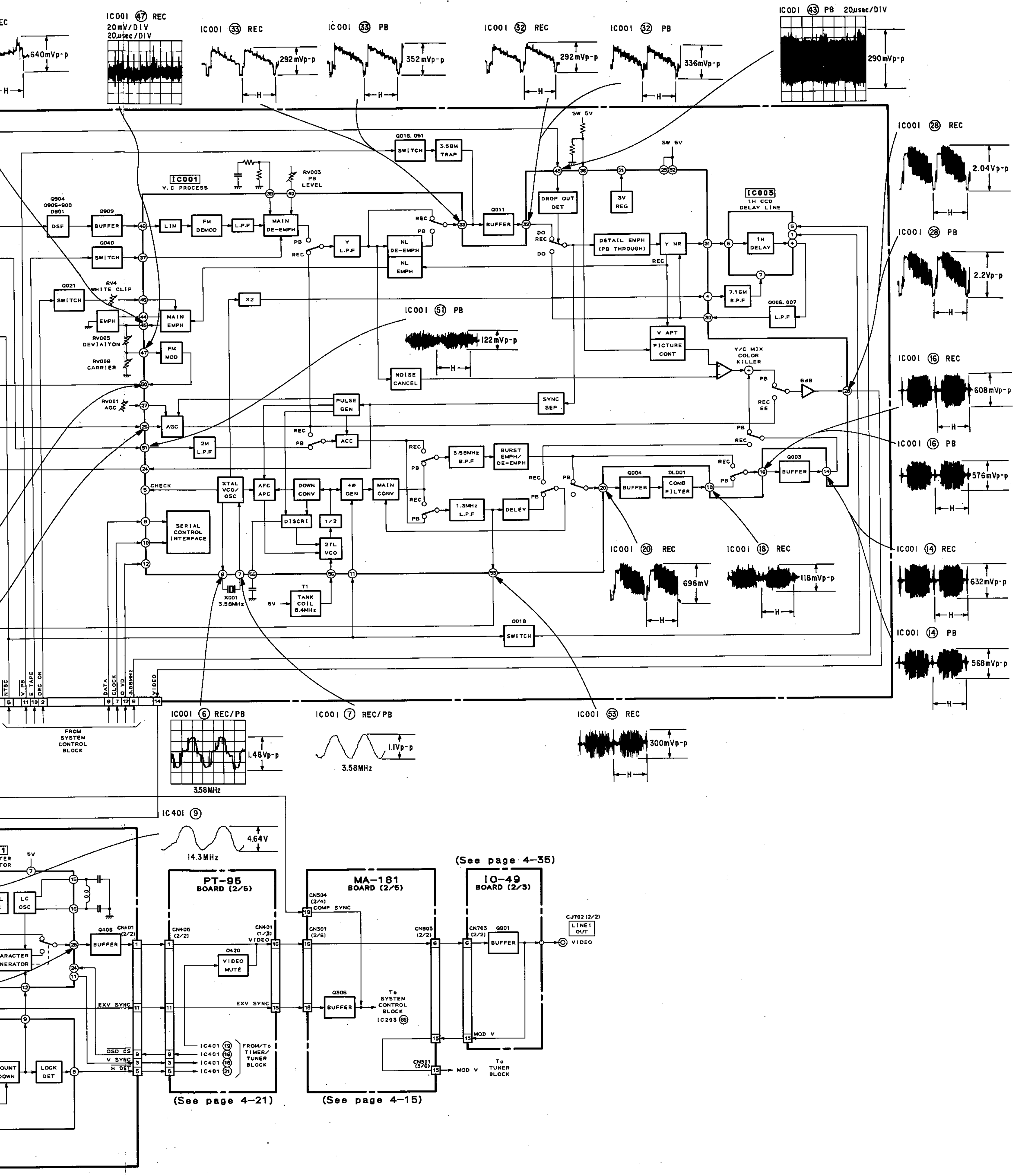
3-1. OVERALL BLOCK DIAGRAM


(See page 4-35)
RV-33 BOARD (1/2)
IC801
IC001
VIDEO
SP CH1
SP CH2
EP CH1
EP CH2
VIDEO REC/PB AMP
VIDEO Y/C PROCESS
IC003
1H DELAY
RF SWP
REC CUR
Q890-892
FE OSC
FE SW
FE ERASE
FE ON
SLV-920HF ONLY
(See page 4-7)
CG-20 BOARD
IC401
CHARACTER GENERATER
OSD CS
V SYNC
IC402
SYNC AFC
H DET
(See page 4-35)
PT-95 BOARD (1/2)
(See page 4-21)
IO-49 BOARD (1/3)
Q901
BUFFER
VIDEO OUT
LINE 1
(See page 4-
CB-44 BOARD
IC031
IC701
IC001
EDS
C BOX CONTROL
CB CS, CB
IO-49 BOARD (2/3)
LINE 1
VIDEO IN
LINE 2
IC305
VIDEO SW
TU VIDEO
(See page 4-35)
MF-227 BOARD (1/3)
(See page 4-15)
MA-181 BOARD (1/3)
(See page 4-15)
VHF/UHF
IN
OUT
RF801
TU801
VHF/UHF TUNER
Q803
BUFFER
MOD V
MOD A
TU (L/R)
STD
PLL DATA, PLL CLK, PLL ENABLE, AUTO PRESET, F MONO
AFT, STEREO
(See page 4-7)
(See page 4-33)
RV-33 BOARD (2/2)
IC260
AUDIO
CH1
CH2
AFM REC/PB AMP
PB RF
REC RF
HF-34 BOARD
IC101
AUDIO PROCESS
L1 AU (L)
L1 AU (R)
HIFI (L)
HIFI (R)
AF SWP
AUDIO REC/PB
AUDIO ERASE
FULL ERASE
IC401
PB/REC AMP SWITCH
NORM AU
BIAS OSC
IC701
AUDIO MODE SELECT
LINE 1 (L)
AUDIO IN
LINE 1 (R)
IC101
IC703
INPUT SELECT
STD
LINE 1 (L)
AUDIO OUT
LINE 1 (R)
(See page 4-15)
MF-227 BOARD (2/3)
LINE 2 (L)
AUDIO IN
LINE 2 (R)
L2 AU (L)
L2 AU (R)
TU (L)
TU (R)
IO-49 BOARD (3/3)
(See page 4-35)
05
(See page 4-28)
MF-226 BOARD
LED
LED DRIVE
H REW, RVS, PAUSE, REC
DMS BLOCK
LED
IC301
LCD
LCD DRIVE
LC
FUNCTION SWITCH
SHUTTLE SWITCH
AD3-AD7
SW BLOCK
FUNCTION SWITCH
AD4-AD6
(See page 4-28)
PL-24 BOARD
PL LED
B.L LED
(See page 4-15)
MF-227 BOARD (3/3)
FUNCTION SWITCH
POWER EJECT
POWER LED
POWER LED
MA-181 BOARD (2/3)
IC601
REMOTE CONTROL RECEVER
SIRCS
(See page 4-15)


35)
VIDEO OUT LINE 1
MA-181 BOARD (3/3)
(See page 4-15)
IC203
DRUM MOTOR (1/2)
DRUM FG
DRUM PG
RF SWP
AF SWP
DRUM FG
IC101
DRUM PG
WAVE SHAPER
DRUM SERVO
D VS
IC202
DRUM ERROR INTEGRATER
M901 DRUM MOTOR (2/2)
M901 DRUM
CAPSTAN MOTOR (1/2)
CAPSTAN FG
CAPSTAN FG AMP
CAP FG
CAPSTAN ERROR INTEGRATER
M902 CAPSTAN MOTOR (2/2)
M902 CAPSTAN
(See page 4-40)
CB-44 BOARD
IC031
IC701
IC001
EDS
C BOX CONTROL
CABLE BOX
CTL
REC CTL
PB CTL
INDEX
CTL REC/PB AMP
CAP SERVO
CAP VS
CB CS, CB RST, EDS CS, S CLK, SI BUS, SO BUS
IC002
S SENS
Q002 SUPPLY END SENSOR
FE ON
T SENS
Q001 TAKE UP END SENSOR
WAVE SHAPER AMP
SYSTEM CONTROL
S REEL
SUPPLY REEL FG
T REEL
TAKE UP REEL FG
IC401
EO
V SYNC
OSD CS
H DET
DATA, PLL CLK, PLL ENABLE, AUTO PRESET, F MONO
CB CS, CB RST, EDS CS, S CLK, SI BUS, SO BUS COSMO CS, COSMO RST
ee page 4-28)
MF-226 BOARD
TIMER/TUNER MODE CONTROL
S001 CASSETTE UP/DOWN
S002 REC PROOF
LED
LED DRIVE
H REW, RVS, FWD, FF PAUSE, REC, TIMER
(See page 4-15)
CA-41 BOARD
C301
LCD
LCD DRIVE
LCD CS
IC201
VIDEO CONTROL SIGNAL
CAM/ LOADING MOTOR DRIVE
M903 CAM
AD3-AD7
CM-14 BOARD
M904 LOADING
-AD6
AUDIO CONTROL SIGNAL
(See page 4-15)
See page 4-28)
PL-24 BOARD
PL LED
B.L LED
A 12V
M 12V
SW 9V
A 5V
D 6V
DC 35V
A -8V
POWER SUPPLY BLOCK
CAM ENCODER
MODE1-4
ROTARY SWITCH CAM POSITION
IC303
SYNCHRONIZED SERIAL BUS TO PARALLEL
REC CUR
POWER EJECT
JUST CLK
AC IN
POWER LED
POWR CONT
MA-181 BOARD (2/3)
SIRCS
SIRCS
PT-95 BOARD (2/2)
(See page 4-21)
See page 4-15)

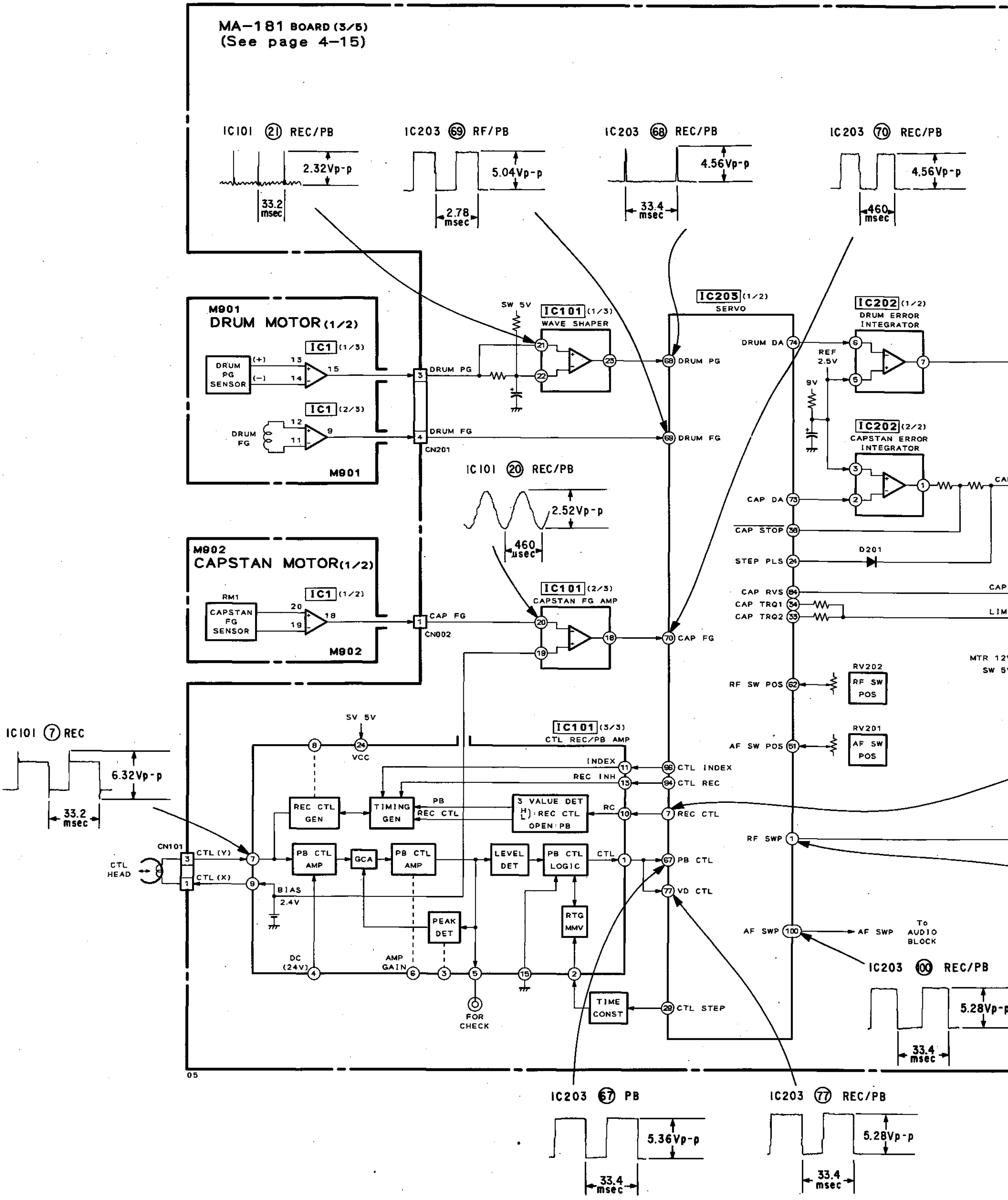
3-2. VIDEO BLOCK DIAGRAM


IC801 ④ REC
20μsec/DIV
680Vp-p
IC801 ㉓ PB
20μsec/DIV
704mVp-p
IC001 ㊺ REC
640mVp-p
H
IC001 ㊼ REC
20mV/DIV
20μsec/DIV
IC801 ㉗ PB 20μsec/DIV
696mVp-p
RV-33 BOARD (1/2)
(See page 4-7)
IC801
VIDEO REC/PB AMP
IC001
Y. C PROCESS
VIDEO HEAD
SP CH1
SP CH2
EP CH1
EP CH2
CN801
PB
EP
SP
CH1
CH2
VCA
AMP SW
PB RF AMP
PB RF AGC AMP
CHROMA TRAP
BUFFER
Q840
Q841
Q911, 912
PB RF EQ AMP
Q904
Q906-908
D901
DSF
Q909
BUFFER
LIM
FM DEMOD
Q040
SWITCH
B.P.F
IC801 ㉕ PB
20μsec/DIV
328mVp-p
Q021
SWITCH
RV4
WHITE CLIP
EMPH
MAIN EMPH
RV005
DEVIAITON
RV006
CARRIER
FM MOD
ENV DET
COMP
LOGIC
T PLAY DET
REC DET
Q819
Q818
REC
FORM AUDIO BLOCK
Q811
9V SW
12V
Q810
SW
RV001
AGC
AGC
2M L.P.F
CHECK
SERIAL CONTROL INTERFACE
SP REC ON
EP REC ON
D801
D802
FLYING ERASE HEAD
Q890, 891
FE OSC
Q892
FE SW
SLV-920HF ONLY
IC801 ㉙ REC
20μsec/DIV
280mVp-p
Q034
BUFFER
Q013
BUFFER
630k TRAP
CN802
REC CUR
PB RF
RF SWP
CHECK PIN
CN802 ① REC
20μsec/DIV
544mVp-p
CN802 ③ REC/PB
5.2Vp-p
33.4 msec
D803
Q029
REC SWITCH
Q030
SWITCH
5V
Q031
Q817
REC CURRENT SWITCH
RV009
REC C LEVEL
CN802 ② PB
20μsec/DIV
576mVp-p
FE ON
REC CUR
RF SP
RF ENV
REC P
HEAD CONT
CN001 (2/2)
FROM/TO SYSTEM CONTROL BLOCK
CN002
RF SWP
VIDEO
COMP SYNC
NTSC
V PB
E TAPE
ORC ON
DATA
CLOCK
Q VD
3.58MHz
VIDEO
FROM SERVO BLOCK
FROM SYSTEM CONTROL BLOCK
IC001 ㊿ REC
20μsec/DIV
832mVp-p
IC001 ㉖ REC
1.08Vp-p
H
IC001 ⑥ RE
3.58MHz
IC306
VIDEO SW
+5V
FROM TUNER BLOCK
CN301 (1/6)
TU VIDEO
CN304 (1/4)
VIDEO OUT
VIDEO IN
CN803 (1/2)
L1 V
CN402 (1/3)
L2 V
CJ702 (2/2)
LINE1 IN
VIDEO
(See page 4-35)
CN403 (1/2)
IO-49 BOARD (1/3)
PJ601 (2/2)
LINE2 IN
VIDEO
CN601 (1/3)
MF-227 BOARD (1/3)
(See page 4-15)
LINE1
LINE2
MUTE
FORM SYSTEM CONTROL
SI BUS
S CLK
CN302 (1/3)
MA-181 BOARD (1/6)
(See page 4-15)
IC401 ⑧
5.36Vp-p
14.3MHz
(See page 4-21)
CN402 (1/2)
CN405 (1/2)
VIDEO
SI BUS
S CLK
PT-95 BOARD (1/6)
IC401 ③,㉕
2.04Vp-p
H
CG-20 BOARD
(See page 4-35)
IC401
CHARACTER GENERATOR
5V
X401 14.3MHz
XTAL OSC
LC OSC
CN401 (1/2)
Q404
BUFFER
CHARACTER GENERATOR
Q406
BUFFER
CN401 (2/2)
IC402
SYNC AFC
5V
V SEP
SYNC SEP
AFC
COUNT DOWN
LOCK DET
32fH VCO
X402 500k
EXV SYNC
OSD CS
V SYNC
H DET
IC401 ⑨
14.3MHz
CN405 (2/2)
PT-
BOARD
(See pa

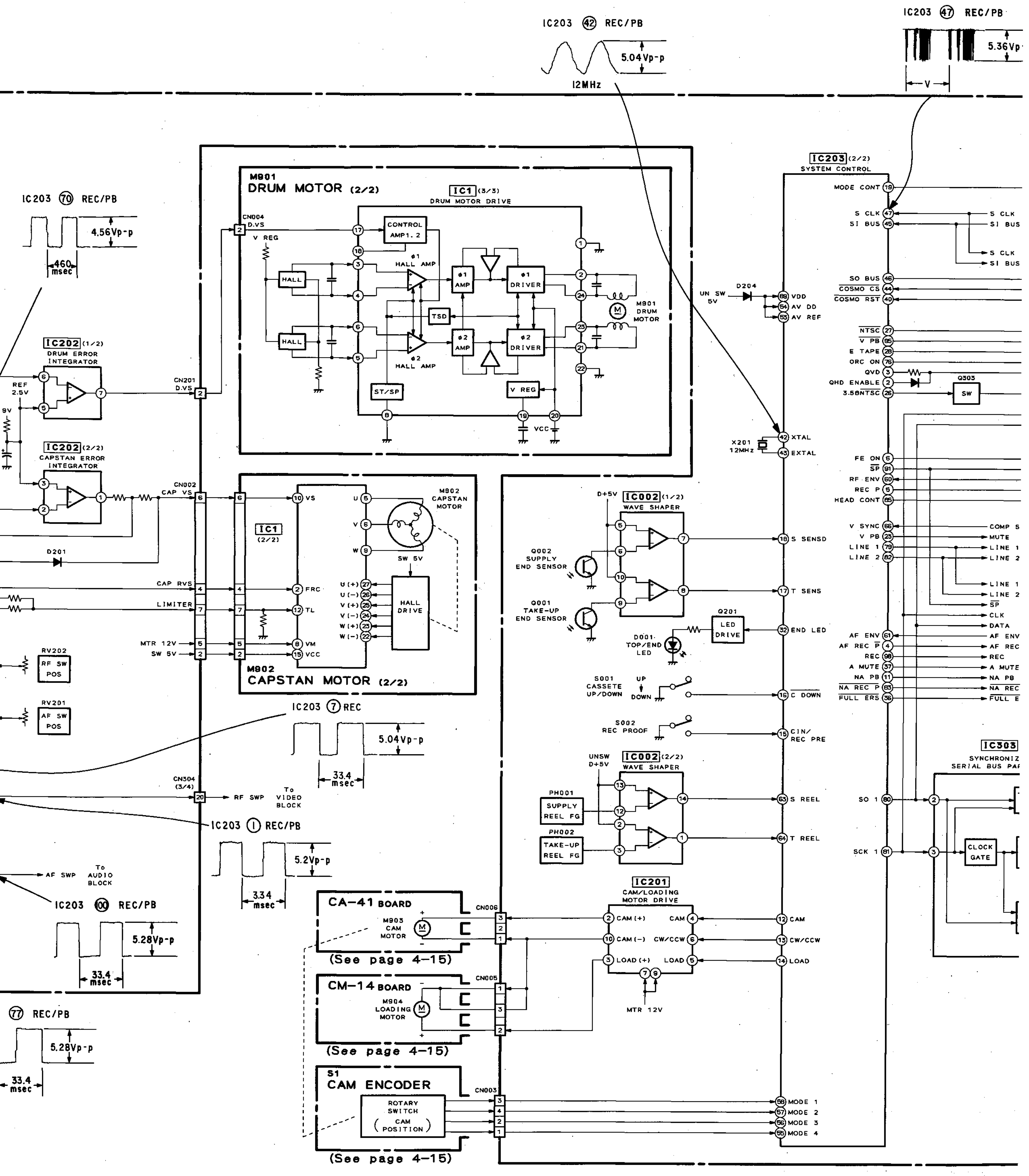


IC001 (47) REC
20mV/DIV
20μsec/DIV
640mVp-p
IC001 (33) REC
292mVp-p
IC001 (33) PB
352mVp-p
IC001 (32) REC
292mVp-p
IC001 (32) PB
336mVp-p
IC001 (43) PB 20μsec/DIV
290mVp-p
IC001 (28) REC
2.04Vp-p
IC001 (28) PB
2.2Vp-p
IC001 (51) PB
122mVp-p
IC001 (16) REC
608mVp-p
IC001 (16) PB
576mVp-p
IC001 (14) REC
632mVp-p
IC001 (14) PB
568mVp-p
IC001 (20) REC
696mV
IC001 (18) REC
118mVp-p
IC001 (6) REC/PB
1.48Vp-p
3.58MHz
IC001 (7) REC/PB
1.1Vp-p
3.58MHz
IC001 (53) REC
300mVp-p
IC401 (9)
4.64V
14.3MHz
H
IC001
Y. C PROCESS
Q904
Q906-908
D901
DSF
Q909
BUFFER
LIM
FM DEMOD
L.P.F
MAIN DE-EMPH
RV003 PB LEVEL
Q040
SWITCH
Q021
SWITCH
RV4 WHITE CLIP
EMPH
MAIN EMPH
RV005 DEVIAITON
RV006 CARRIER
FM MOD
RV001 AGC
AGC
2M L.P.F
CHECK
SERIAL CONTROL INTERFACE
XTAL VCO/OSC
AFC APC
DOWN CONV
DISCRI
1/2
2fL VCO
4ø GEN
MAIN CONV
X2
PULSE GEN
ACC
Q016, 051
SWITCH
3.58M TRAP
Q011
BUFFER
Y L.P.F
NL DE-EMPH
NL EMPH
NOISE CANCEL
SYNC SEP
SW 5V
DROP OUT DET
3V REG
DETAIL EMPH (PB THROUGH)
Y NR
IC003
1H CCD DELAY LINE
1H DELAY
7.16M B.P.F
Q006, 007
L.P.F
V APT
PICTURE CONT
Y/C MIX COLOR KILLER
6dB
DO
REC
PB
EE
3.58MHz B.P.F
BURST EMPH/DE-EMPH
1.3MHz L.P.F
DELEY
Q004
BUFFER
DL001
COMB FILTER
Q003
BUFFER
T1
TANK COIL 8.4MHz
5V
X001 3.58MHz
Q018
SWITCH
NTSC
V PB
E TAPE
ORC ON
DATA
CLOCK
Q VD
3.58MHz
VIDEO
FROM SYSTEM CONTROL BLOCK
LC OSC
CHARACTER GENERATOR
COUNT DOWN
LOCK DET
Q405
BUFFER
CN401 (2/2)
EXV SYNC
OSD CS
V SYNC
H DET
PT-95
BOARD (2/5)
CN405 (2/2)
CN401 (1/3)
VIDEO
Q420
VIDEO MUTE
IC401 (19)
IC401 (16)
IC401 (18)
IC401 (21)
FROM/To TIMER/TUNER BLOCK
(See page 4-21)
MA-181
BOARD (2/5)
CN304 (2/4)
COMP SYNC
CN301 (2/6)
CN805 (2/2)
Q306
BUFFER
To SYSTEM CONTROL BLOCK IC203 (66)
CN301 (3/6)
MOD V
To TUNER BLOCK
(See page 4-15)
(See page 4-35)
IO-49
BOARD (2/3)
CN703 (2/2)
Q901
BUFFER
CJ702 (2/2)
LINE1 OUT
VIDEO

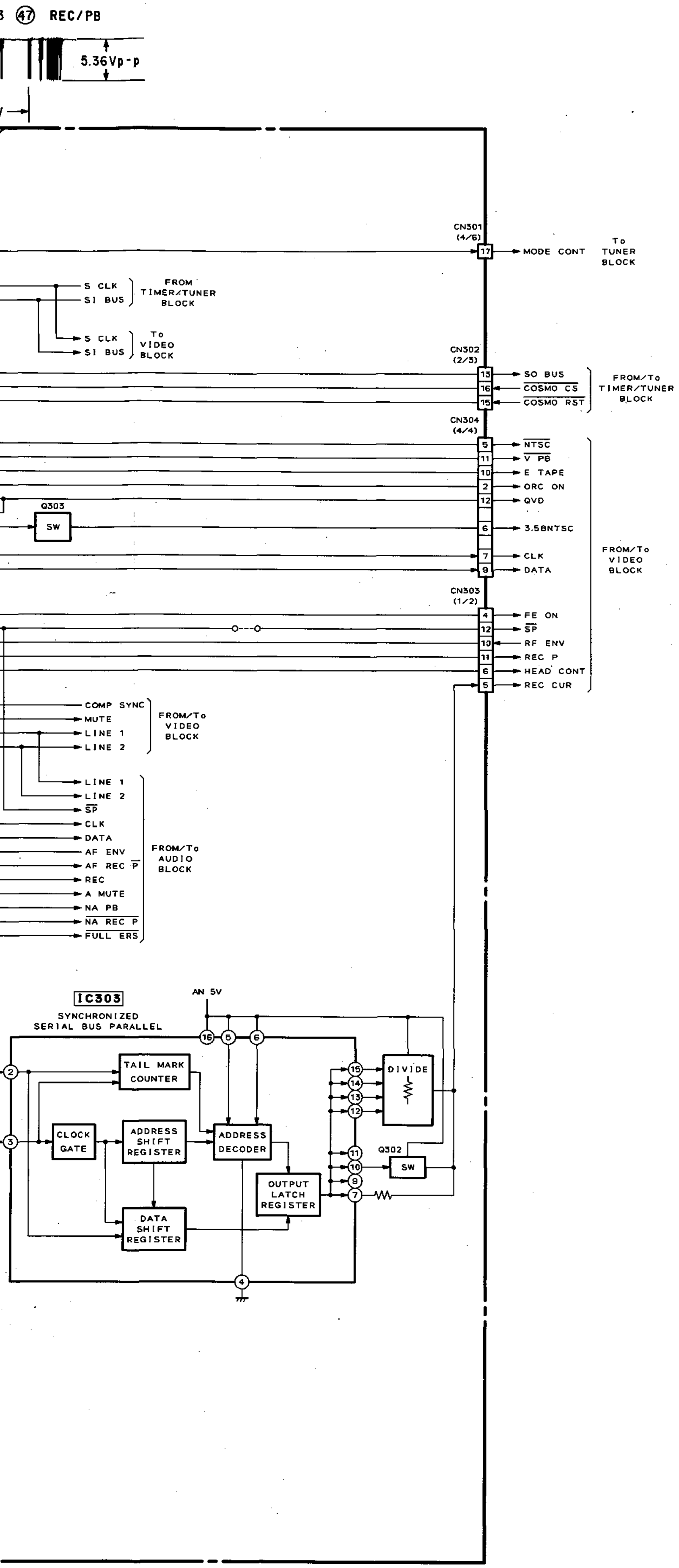
3-3. SERVO, SYSTEM CONTROL BLOCK DIAGRAM



MA-181 BOARD (3/5)
(See page 4-15)
IC101 ㉑ REC/PB
2.32Vp-p
33.2 msec
IC203 (69) RF/PB
5.04Vp-p
2.78 msec
IC203 (68) REC/PB
4.56Vp-p
33.4 msec
IC203 (70) REC/PB
4.56Vp-p
460 msec
M901
DRUM MOTOR (1/2)
IC1 (1/3)
DRUM PG SENSOR
(+)
(−)
13
14
15
IC1 (2/3)
DRUM FG
12
11
9
M901
DRUM PG
DRUM FG
CN201
SW 5V
IC101 (1/3)
WAVE SHAPER
IC203 (1/2)
SERVO
68 DRUM PG
68 DRUM FG
DRUM DA 74
CAP DA 73
CAP STOP 38
STEP PLS 24
CAP RVS 64
CAP TRQ1 34
CAP TRQ2 33
70 CAP FG
RF SW POS 62
AF SW POS 61
96 CTL INDEX
94 CTL REC
7 REC CTL
RF SWP 1
67 PB CTL
77 VD CTL
AF SWP 100
29 CTL STEP
IC202 (1/2)
DRUM ERROR INTEGRATOR
IC202 (2/2)
CAPSTAN ERROR INTEGRATOR
REF 2.5V
9V
D201
CAP
LIM
MTR 12V
SW 5V
RV202
RF SW POS
RV201
AF SW POS
AF SWP
To AUDIO BLOCK
IC203 (100) REC/PB
5.28Vp-p
33.4 msec
IC101 ⑳ REC/PB
2.52Vp-p
460 μsec
M902
CAPSTAN MOTOR (1/2)
IC1 (1/2)
RM1
CAPSTAN FG SENSOR
20
19
18
M902
CAP FG
CN002
IC101 (2/3)
CAPSTAN FG AMP
IC101 ⑦ REC
6.32Vp-p
33.2 msec
CN101
CTL HEAD
CTL (Y)
CTL (X)
5V 5V
VCC
IC101 (3/3)
CTL REC/PB AMP
INDEX
REC INH
REC CTL GEN
TIMING GEN
PB
REC CTL
3 VALUE DET
H: REC CTL
L: OPEN PB
RC
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
CTL
BIAS 2.4V
PEAK DET
RTG MMV
DC (24V)
AMP GAIN
FOR CHECK
TIME CONST
05
IC203 (67) PB
5.36Vp-p
33.4 msec
IC203 (77) REC/PB
5.28Vp-p
33.4 msec

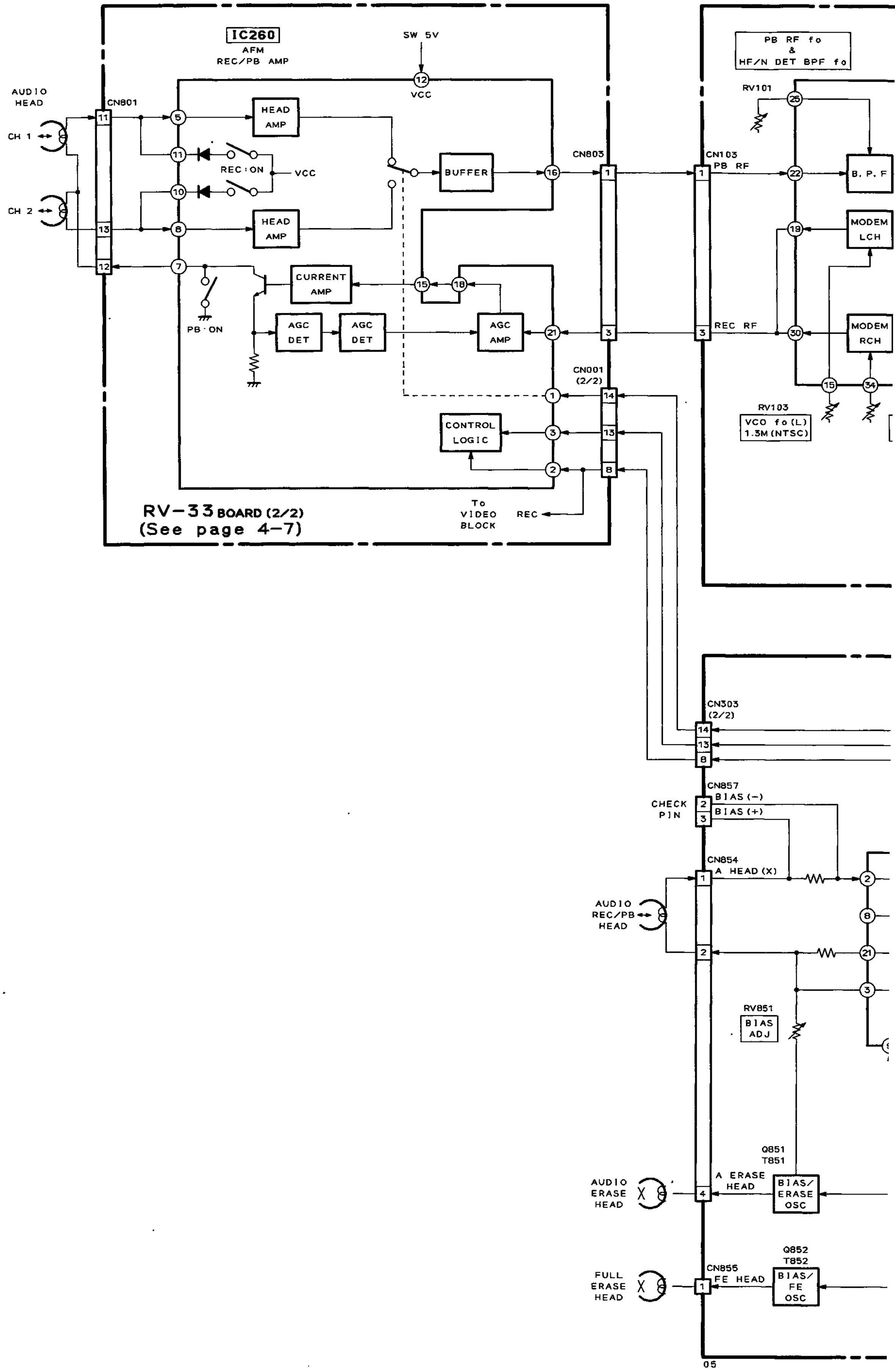


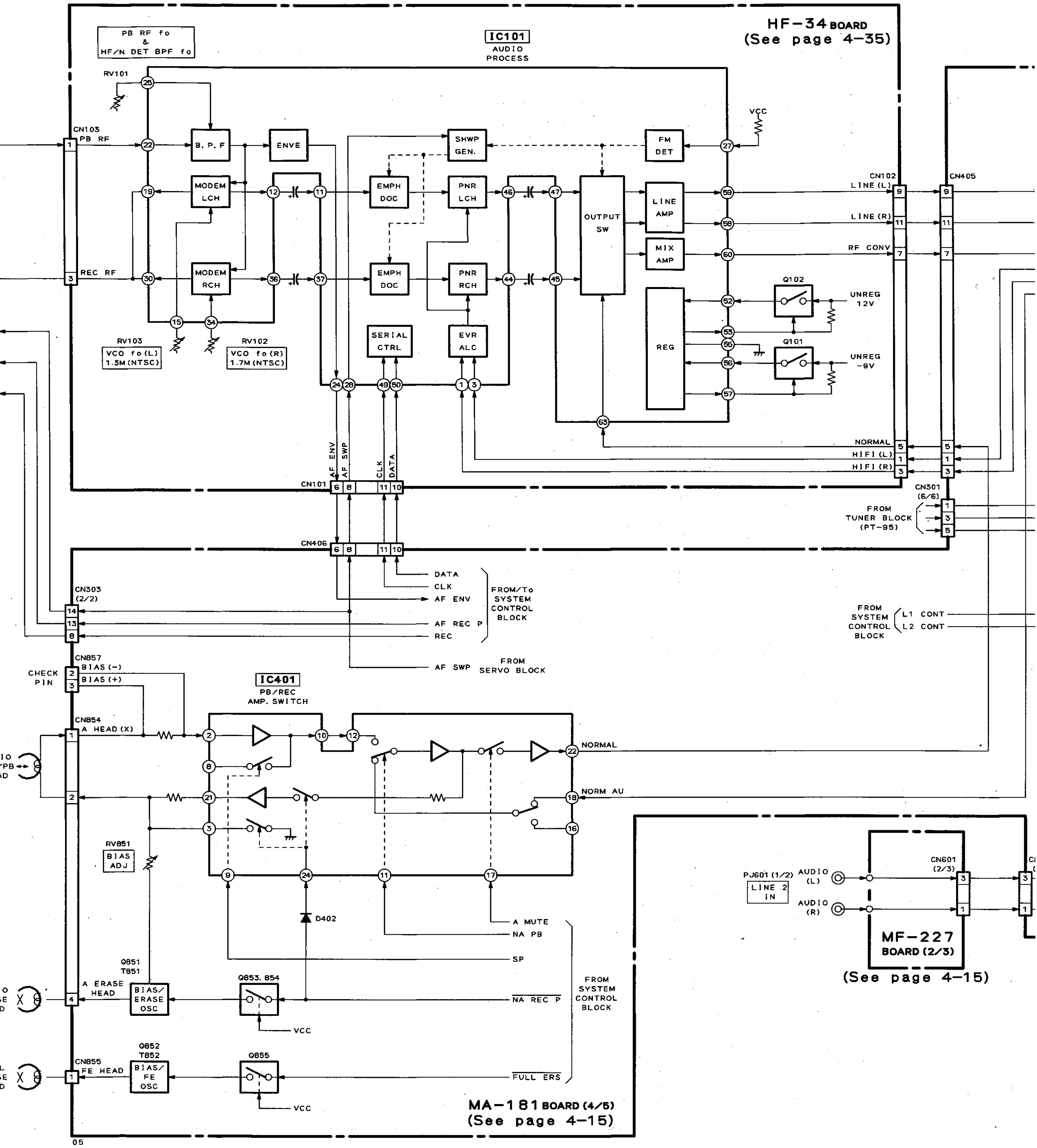
IC203 (42) REC/PB
5.04Vp-p
12MHz
IC203 (47) REC/PB
5.36Vp
V
IC203 (70) REC/PB
4.56Vp-p
460 msec
M801
DRUM MOTOR (2/2)
IC1 (3/3)
DRUM MOTOR DRIVE
CN004
D.VS
V REG
CONTROL AMP1.2
HALL
HALL
φ1 HALL AMP
φ2 HALL AMP
φ1 AMP
φ2 AMP
φ1 DRIVER
φ2 DRIVER
TSD
ST/SP
V REG
VCC
M901 DRUM MOTOR
IC202 (1/2)
DRUM ERROR INTEGRATOR
REF 2.5V
9V
CN201 D.VS
IC202 (2/2)
CAPSTAN ERROR INTEGRATOR
CN002 CAP VS
D201
CAP RVS
LIMITER
MTR 12V
SW 5V
RV202
RF SW POS
RV201
AF SW POS
IC1 (2/2)
VS
FRC
TL
VM
VCC
U
V
W
M902 CAPSTAN MOTOR
SW 5V
HALL DRIVE
U(+)
U(-)
V(+)
V(-)
W(+)
W(-)
M802
CAPSTAN MOTOR (2/2)
IC203 (7) REC
5.04Vp-p
33.4 msec
CN304 (3/4)
RF SWP
To VIDEO BLOCK
IC203 (1) REC/PB
5.2Vp-p
33.4 msec
AF SWP
To AUDIO BLOCK
IC203 (100) REC/PB
5.28Vp-p
33.4 msec
(77) REC/PB
5.28Vp-p
33.4 msec
CA-41 BOARD
M903 CAM MOTOR
(See page 4-15)
CN006
CM-14 BOARD
M904 LOADING MOTOR
(See page 4-15)
CN005
S1
CAM ENCODER
ROTARY SWITCH (CAM POSITION)
(See page 4-15)
CN003
IC201
CAM/LOADING MOTOR DRIVE
CAM(+)
CAM(-)
LOAD(+)
CAM
CW/CCW
LOAD
MTR 12V
IC002 (1/2)
WAVE SHAPER
D+5V
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
Q201 LED DRIVE
D001 TOP/END LED
S001 CASSETE UP/DOWN
UP
DOWN
S002 REC PROOF
IC002 (2/2)
WAVE SHAPER
UNSW D+5V
PH001 SUPPLY REEL FG
PH002 TAKE-UP REEL FG
UN SW 5V
D204
X201 12MHz
IC203 (2/2)
SYSTEM CONTROL
MODE CONT
S CLK
SI BUS
SO BUS
COSMO CS
COSMO RST
VDD
AV DD
AV REF
NTSC
V PB
E TAPE
ORC ON
QVD
QHD ENABLE
3.58NTSC
Q303
SW
XTAL
EXTAL
FE ON
SP
RF ENV
REC P
HEAD CONT
V SYNC
V PB
LINE 1
LINE 2
S SENSD
T SENS
END LED
C DOWN
CIN/ REC PRE
S REEL
T REEL
CAM
CW/CCW
LOAD
MODE 1
MODE 2
MODE 3
MODE 4
AF ENV
AF REC P
REC
A MUTE
NA PB
NA REC P
FULL ERS
SO 1
SCK 1
S CLK
SI BUS
S CLK
SI BUS
COMP S
MUTE
LINE 1
LINE 2
LINE 1
LINE 2
SP
CLK
DATA
AF ENV
AF REC
REC
A MUTE
NA PB
NA REC
FULL E
IC303
SYNCHRONIZ
SERIAL BUS PA
CLOCK GATE



3 (47) REC/PB
5.36Vp-p
CN301 (4/6)
17
MODE CONT
To TUNER BLOCK
S CLK
SI BUS
FROM TIMER/TUNER BLOCK
S CLK
SI BUS
To VIDEO BLOCK
CN302 (2/3)
13 SO BUS
16 COSMO CS
15 COSMO RST
FROM/To TIMER/TUNER BLOCK
CN304 (4/4)
5 NTSC
11 V PB
10 E TAPE
2 ORC ON
12 QVD
Q303
SW
6 3.58NTSC
7 CLK
9 DATA
FROM/To VIDEO BLOCK
CN303 (1/2)
4 FE ON
12 SP
10 RF ENV
11 REC P
6 HEAD CONT
5 REC CUR
COMP SYNC
MUTE
LINE 1
LINE 2
FROM/To VIDEO BLOCK
LINE 1
LINE 2
SP
CLK
DATA
AF ENV
AF REC P
REC
A MUTE
NA PB
NA REC P
FULL ERS
FROM/To AUDIO BLOCK
IC303
SYNCHRONIZED SERIAL BUS PARALLEL
AN 5V
16
5
6
2
3
TAIL MARK COUNTER
CLOCK GATE
ADDRESS SHIFT REGISTER
ADDRESS DECODER
OUTPUT LATCH REGISTER
DATA SHIFT REGISTER
15
14
13
12
DIVIDE
11
10
9
7
Q302
SW
4

3-4. AUDIO BLOCK DIAGRAM


IC260
AFM
REC/PB AMP
SW 5V
VCC
AUDIO
HEAD
CH 1
CH 2
CN801
HEAD AMP
HEAD AMP
REC : ON
VCC
BUFFER
CURRENT AMP
PB · ON
AGC DET
AGC DET
AGC AMP
CONTROL LOGIC
CN803
CN001 (2/2)
RV-33 BOARD (2/2)
(See page 4-7)
To VIDEO BLOCK
REC
PB RF fo & HF/N DET BPF fo
RV101
CN103
PB RF
B. P. F
MODEM LCH
REC RF
MODEM RCH
RV103
VCO fo (L) 1.3M (NTSC)
CN303 (2/2)
CN857
CHECK PIN
BIAS (−)
BIAS (+)
CN854
A HEAD (X)
AUDIO REC/PB HEAD
RV851
BIAS ADJ
Q851
T851
A ERASE HEAD
AUDIO ERASE HEAD
BIAS/ ERASE OSC
Q852
T852
CN855
FE HEAD
FULL ERASE HEAD
BIAS/ FE OSC
05


HF-34 BOARD
(See page 4-35)
PB RF fo
&
HF/N DET BPF fo
IC101
AUDIO
PROCESS
RV101
CN103
PB RF
REC RF
B. P. F
ENVE
SHWP
GEN.
FM
DET
VCC
MODEM
LCH
MODEM
RCH
EMPH
DOC
EMPH
DOC
PNR
LCH
PNR
RCH
OUTPUT
SW
LINE
AMP
MIX
AMP
REG
SERIAL
CTRL
EVR
ALC
Q102
Q101
UNREG
12V
UNREG
-9V
RV103
VCO fo(L)
1.3M(NTSC)
RV102
VCO fo(R)
1.7M(NTSC)
CN102
LINE (L)
LINE (R)
RF CONV
CN405
NORMAL
HIFI (L)
HIFI (R)
AF ENV
AF SWP
CLK
DATA
CN101
CN406
CN301
(6/6)
FROM
TUNER BLOCK
(PT-95)
DATA
CLK
AF ENV
AF REC P
REC
FROM/To
SYSTEM
CONTROL
BLOCK
CN303
(2/2)
AF SWP
FROM
SERVO BLOCK
FROM
SYSTEM
CONTROL
BLOCK
L1 CONT
L2 CONT
CN857
CHECK
PIN
BIAS (-)
BIAS (+)
IC401
PB/REC
AMP. SWITCH
CN854
A HEAD (X)
NORMAL
NORM AU
RV851
BIAS
ADJ
D402
A MUTE
NA PB
SP
NA REC P
FULL ERS
FROM
SYSTEM
CONTROL
BLOCK
Q851
T851
A ERASE
HEAD
BIAS/
ERASE
OSC
Q853, 854
VCC
Q852
T852
CN855
FE HEAD
BIAS/
FE
OSC
Q855
VCC
MA-181 BOARD (4/5)
(See page 4-15)
05
PJ601 (1/2)
LINE 2
IN
AUDIO
(L)
AUDIO
(R)
CN601
(2/3)
MF-227
BOARD (2/3)
(See page 4-15)

REPAIR PARTS LIST

5-1. EXPLODED VIEWS

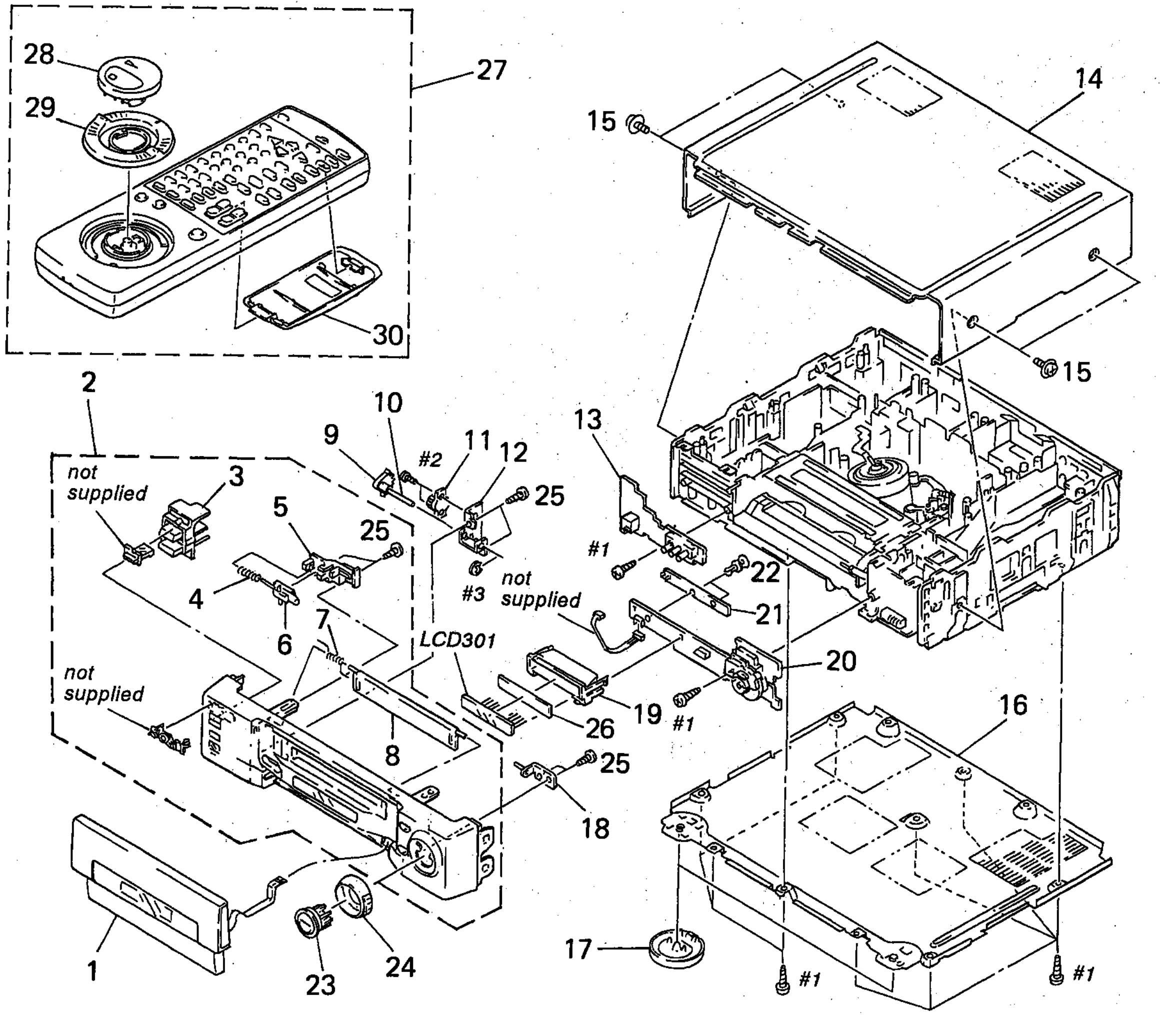
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Abbreviations
  CND: Canadian
  MX : Mexican
  PL : Philippine
  CS : Chilean
  JE : Tourist
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

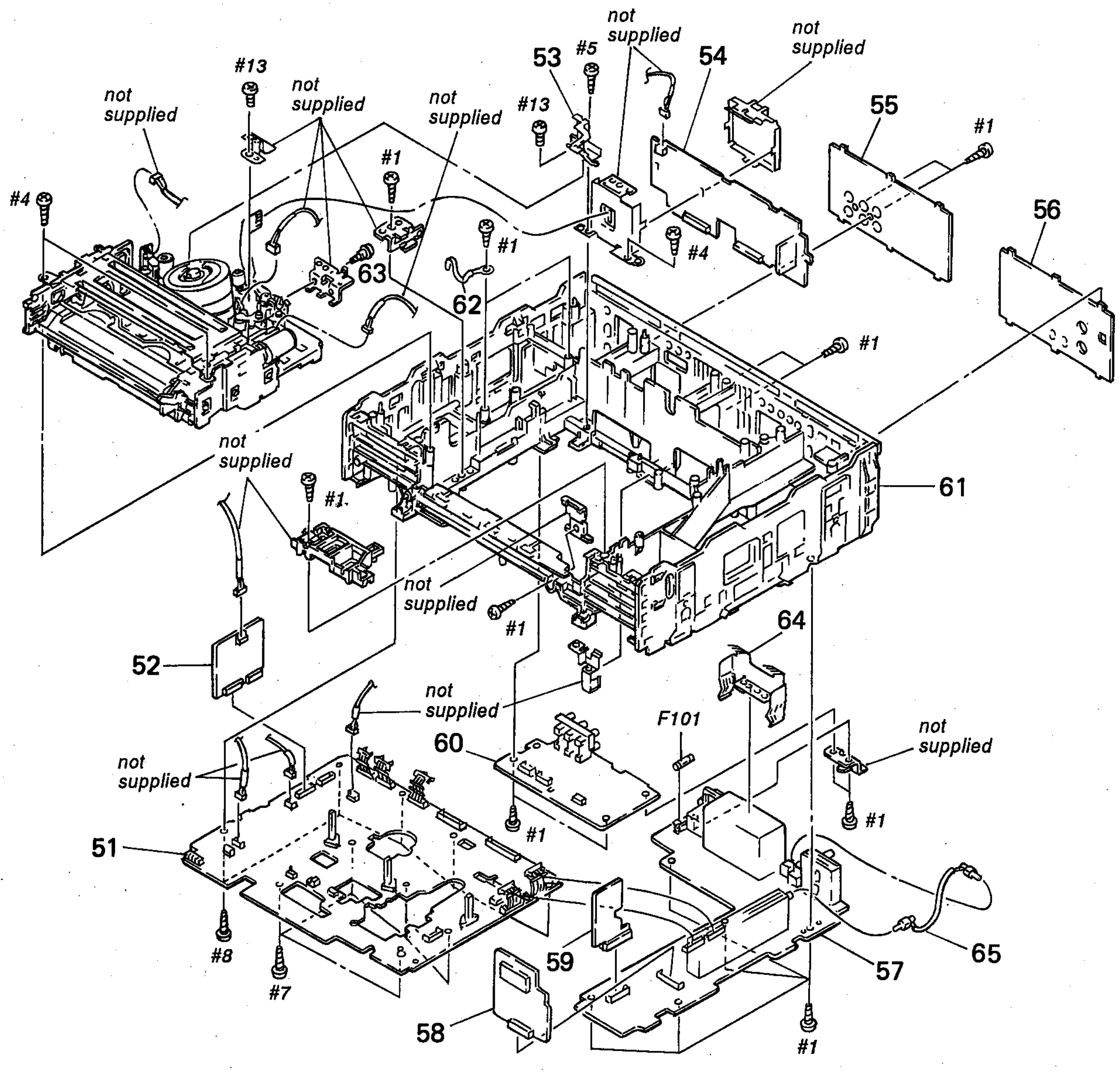
5-1-1. FRONT PANEL AND CABINET ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	1-467-386-31	SWITCH BLOCK, CONTROL	(920HF:US, CND)
1	1-467-386-41	SWITCH BLOCK, CONTROL	(770HF/771HF)
1	1-467-386-51	SWITCH BLOCK, CONTROL	(920HF:MX, CS, PL, PX, JE)
2	X-3943-592-2	PANEL ASSY, FRONT	(770HF)
2	X-3943-604-2	PANEL ASSY, FRONT	(920HF:US, CND)
2	X-3943-689-1	PANEL ASSY, FRONT	(920HF:MX, CS, PL, PX, JE)
2	X-3943-969-1	PANEL ASSY, FRONT	(771HF)
3	3-957-389-01	BUTTON, POWER/EJECT	(770HF/920HF:US, CND)
4	3-957-388-01	SPRING, COMPRESSION	
* 5	3-957-312-11	HOLDER, LOCK CLAW	
6	3-944-564-01	CLAW, LOCK	
7	3-951-089-01	SPRING (GE), FL	
8	3-951-086-81	DOOR, CASSETTE	(770HF/920HF:US, CND)
8	3-957-493-21	DOOR, CASSETTE	(771HF/920HF:MX, CS, PL, PX, JE)
9	3-957-382-01	GEAR, FULCRUM	
* 10	3-957-383-01	SHAFT, FULCRUM GEAR	
11	3-319-224-11	DAMPER, SMALL	
* 12	3-957-381-01	PLATE, FULCRUM (LEFT), DOOR	
* 13	A-6720-582-A	MF-227 BOARD, COMPLETE	(920HF)
* 13	A-6720-583-A	MF-227 BOARD, COMPLETE	(770HF/771HF)
* 14	3-957-396-01	CASE, UPPER	(770HF/920HF:US, CND)
* 14	3-957-396-11	CASE, UPPER	(920HF:MX, CS, PL, PX, JE)
15	3-710-901-11	SCREW, TAPPING	
* 16	3-957-386-01	PLATE, BOTTOM	
17	3-957-246-01	INSULATOR	
* 18	X-3943-587-1	PLATE (RIGHT) ASSY, FULCRUM	
* 19	3-957-314-11	HOLDER, LCD	
* 20	A-6720-605-A	MF-226 BOARD, COMPLETE	(920HF:CS, PL, PX, JE)
* 20	A-6721-584-A	MF-226 BOARD, COMPLETE	(770HF:US/771HF/920HF:US)
* 20	A-6721-606-A	MF-226 BOARD, COMPLETE	(770HF:CND/920HF:CND, MX, CS, PL, PX, JE)
* 21	A-6720-585-A	PL-24 BOARD, COMPLETE	
* 22	3-957-327-01	RIVET, PUSH	
23	X-3943-591-1	BUTTON ASSY, FUNCTION	(770HF/920HF:US, CND)
23	X-3943-692-1	BUTTON ASSY, FUNCTION	(771HF/920HF:MX, CS, PL, PX, JE)
24	X-3943-556-1	RING ASSY, SHUTTLE	(770HF/920HF:US, CND)
24	X-3943-669-1	RING ASSY, SHUTTLE	(771HF/920HF:MX, CS, PL, PX, JE)
25	4-921-277-11	SCREW (B2.6X8), TAPPING, BIND	
26	3-957-338-01	ILLMINATOR	
27	1-467-383-11	REMOTE COMMANDER (RMT-V140A)	(770HF/771HF)
27	1-467-383-21	REMOTE COMMANDER (RMT-V140)	(920HF)
28	X-3943-638-1	BUTTON ASSY	
29	3-957-513-11	SHUTTLE RING	
30	3-708-817-01	COVER, BATTERY	

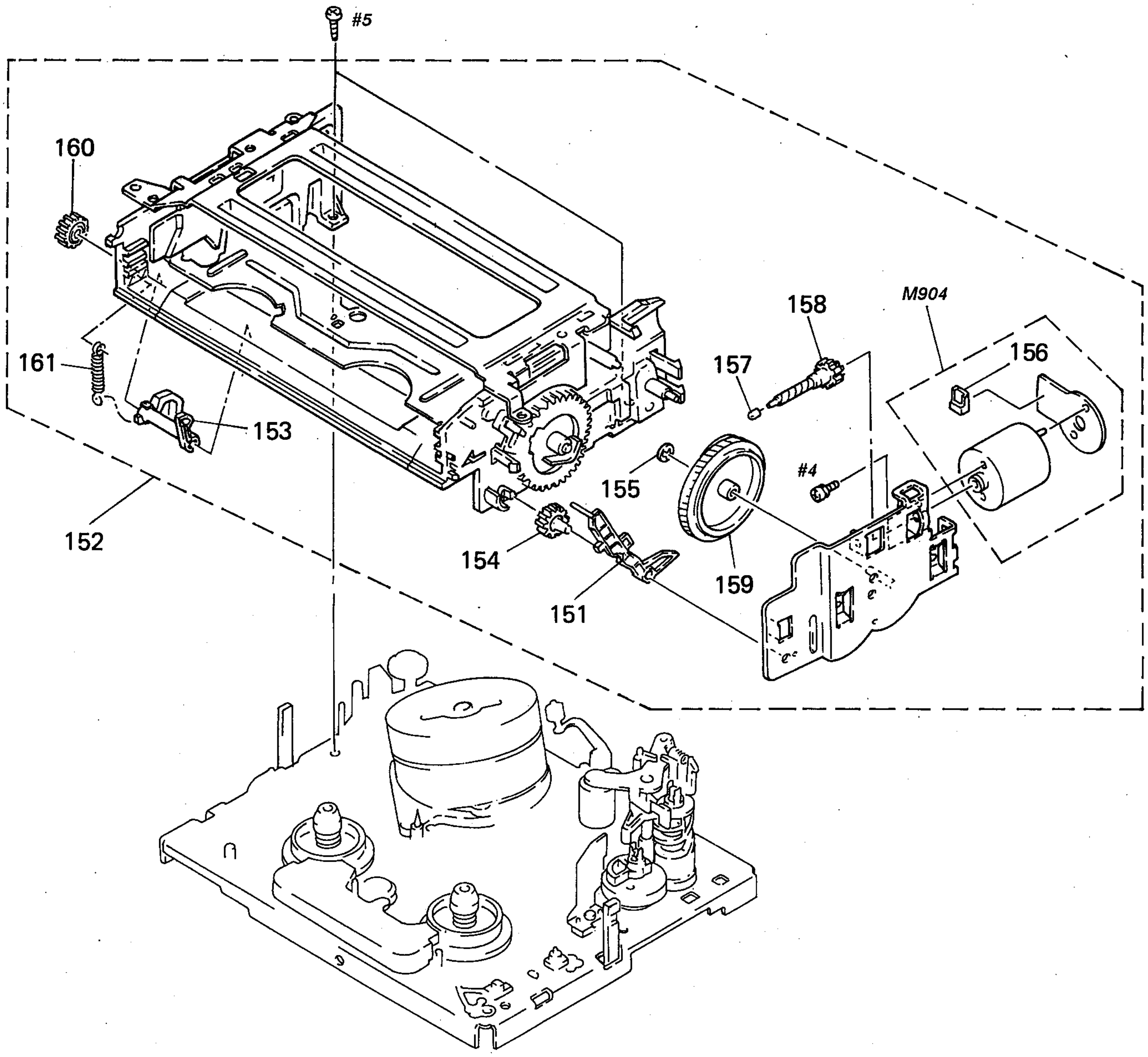
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

5-1-2. CHASSIS ASSEMBLY


not supplied
53
#5
not supplied
54
not supplied
#13
not supplied
not supplied
not supplied
#13
55
#1
#1
56
#4
#1
#4
63
62
#1
not supplied
#1
61
not supplied
#1
64
52
not supplied
F101
not supplied
60
not supplied
#1
#1
51
59
57
65
#8
#7
58
#1

Ref. No.	Part No.	Description	Remark
* 51	A-6782-257-A	MA-181 BOARD, COMPLETE (920HF)	
* 51	A-6782-258-A	MA-181 BOARD, COMPLETE (770HF/771HF)	
* 52	A-6721-586-A	HF-34 BOARD, COMPLETE	
* 53	X-3943-595-1	GROUND ASSY (GT), SHAFT	
* 54	A-6727-523-A	RV-33 BOARD, COMPLETE (920HF)	
* 54	A-6727-525-A	RV-33 BOARD, COMPLETE (770HF/771HF)	
* 55	3-957-418-01	PLATE, JACK (IO), REAR (770HF/920HF:US, CND)	
* 55	3-957-418-21	PLATE, JACK (IO), REAR (920HF:MX)	
* 55	3-957-418-31	PLATE JACK (IO), REAR (920HF:CS, PL, PX, JE)	
* 56	3-957-417-01	PLATE, JACK (TU), REAR	
* 57	A-6726-520-A	PT-95 BOARD, COMPLETE (770HF:CND)	
* 57	A-6727-522-A	PT-95 BOARD, COMPLETE (920HF:US, CND, MX)	
* 57	A-6727-524-A	PT-95 BOARD, COMPLETE (770HF/771HF)	
* 57	A-6727-553-A	PT-95 BOARD, COMPLETE (920HF:CS, PL, PX, JE)	
* 58	A-6781-260-A	CB-44 BOARD, COMPLETE	
* 59	A-6754-645-A	CG-20 BOARD, COMPLETE	
* 60	A-6754-644-A	IO-49 BOARD, COMPLETE	
* 61	3-957-416-01	FRAME (GT), MOLD (770HF/771HF/920HF:US, CND, PX)	
* 61	3-957-416-21	FRAME (GT), MOLD (920HF:MX, CS, PL, JE)	
62	3-703-150-11	STOPPER, WIRING	
63	3-736-055-01	SCREW (3X8), TAPPING	
* 64	3-958-055-01	PLATE, GROUND, POWER	
65	1-558-924-21	CABLE, PIN	
⚠F101	1-532-743-11	FUSE, GLASS CYLINDRICAL (DIA. 5) (2A 125V) (770HF/771HF/920HF:US, CND, MX)	
⚠F101	1-576-228-11	FUSE (H. B. C.) (2A 125V) (920HF:CS, PL, PX, JE)	

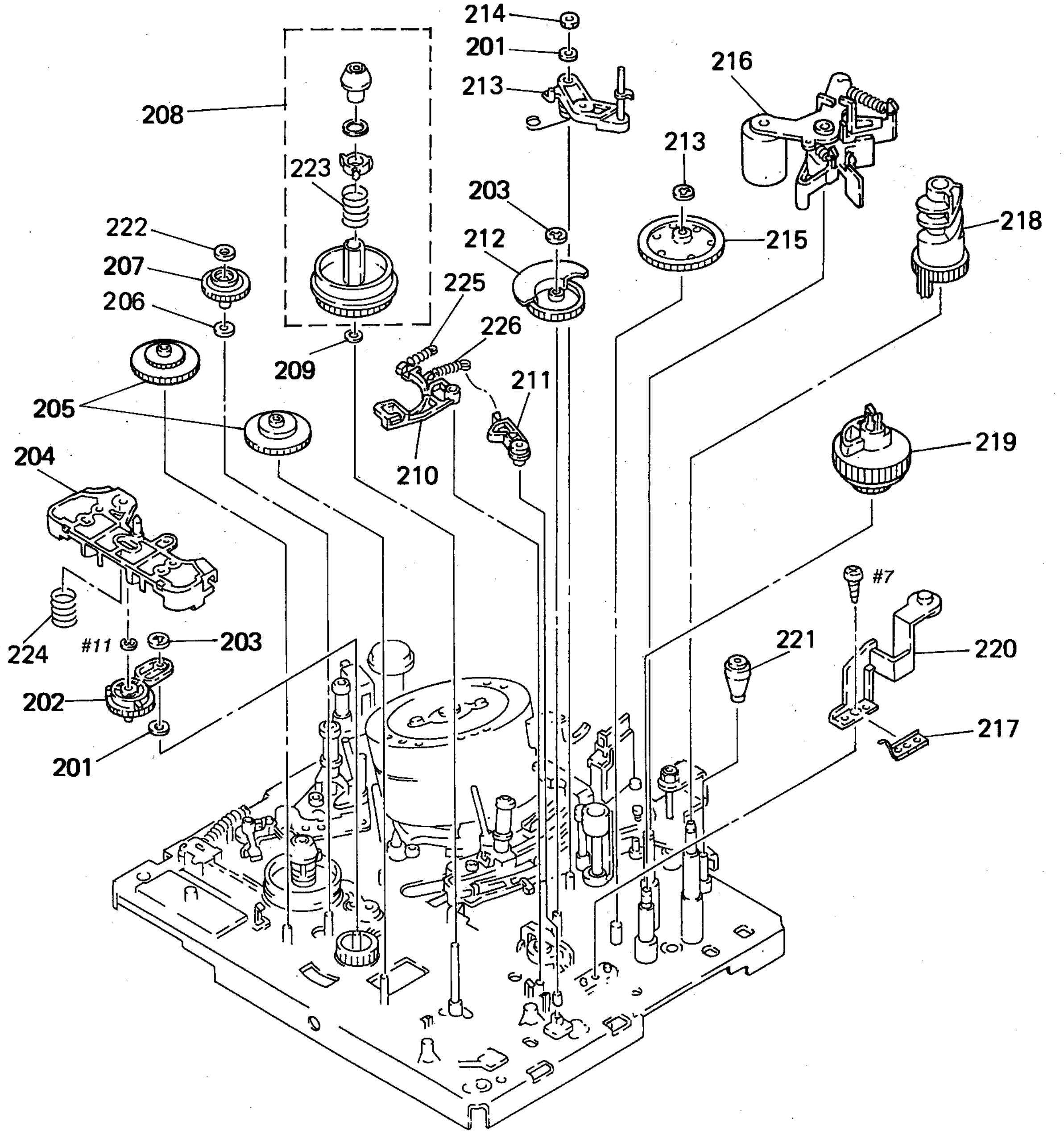
5-1-3. FL CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	3-741-935-06	LEVER, FLAT DOOR	
152	A-6751-421-A	FL BLOCK ASSY (M2)	
153	3-736-163-01	LEVER, ERASING PROTECTION	
154	X-3727-775-2	GEAR (RIGHT) ASSY, MIDWAY	
155	3-696-510-01	WASHER (3), STOPPER	
156	1-564-413-11	PIN, CONNECTOR 3P	

Ref. No.	Part No.	Description	Remark
157	3-716-144-02	RETAINER, WORM	
158	3-736-100-01	GEAR (FL), WORM	
159	3-736-164-01	WHEEL (FL), WORM	
160	3-736-044-02	GEAR (LEFT), MIDWAY	
161	3-739-687-01	SPRING, TENSION (REC PROOF)	
M904	X-3727-784-1	MOTOR ASSY	

5-1-4. MECHANISM CHASSIS ASSEMBLY (1)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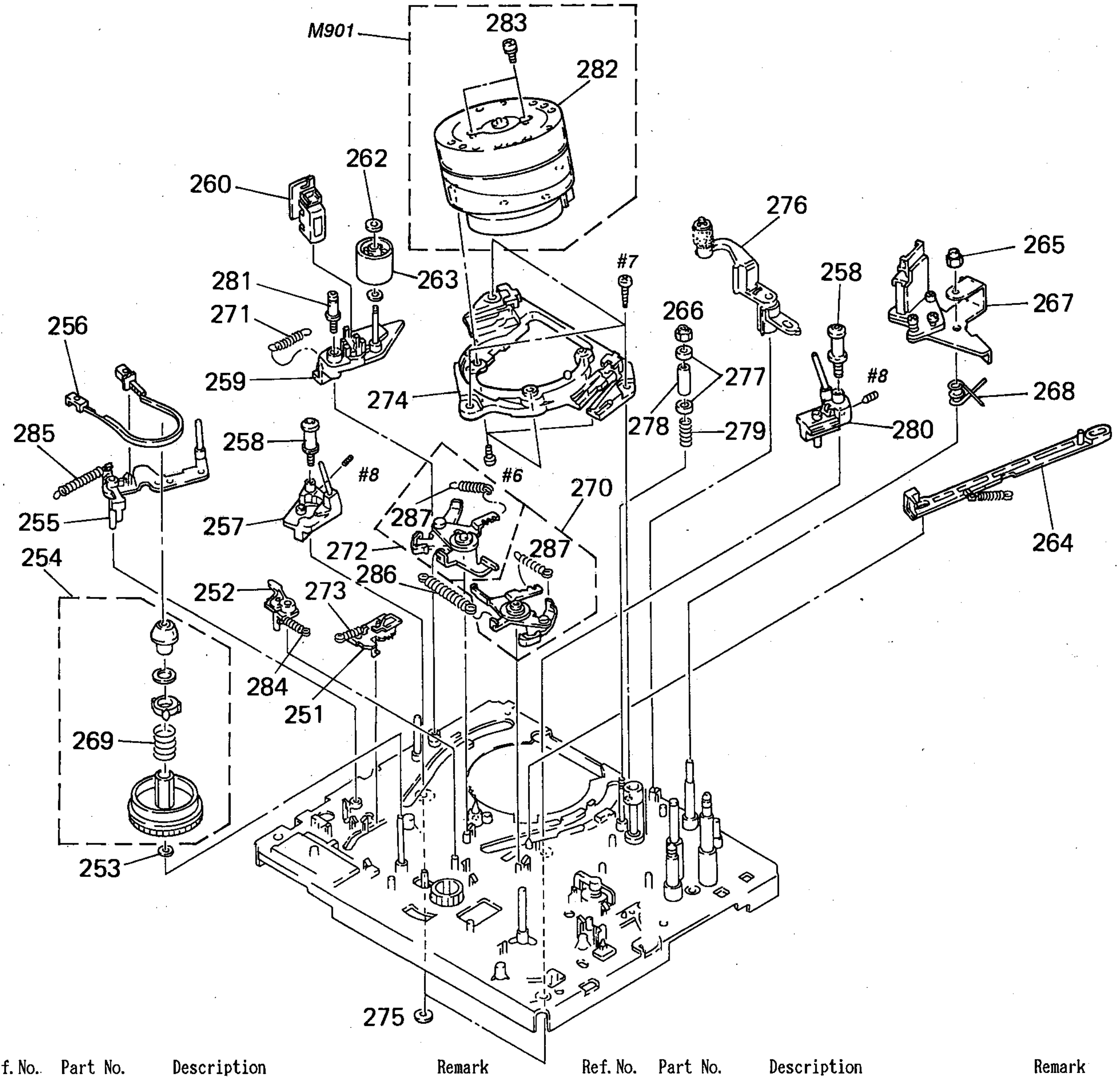
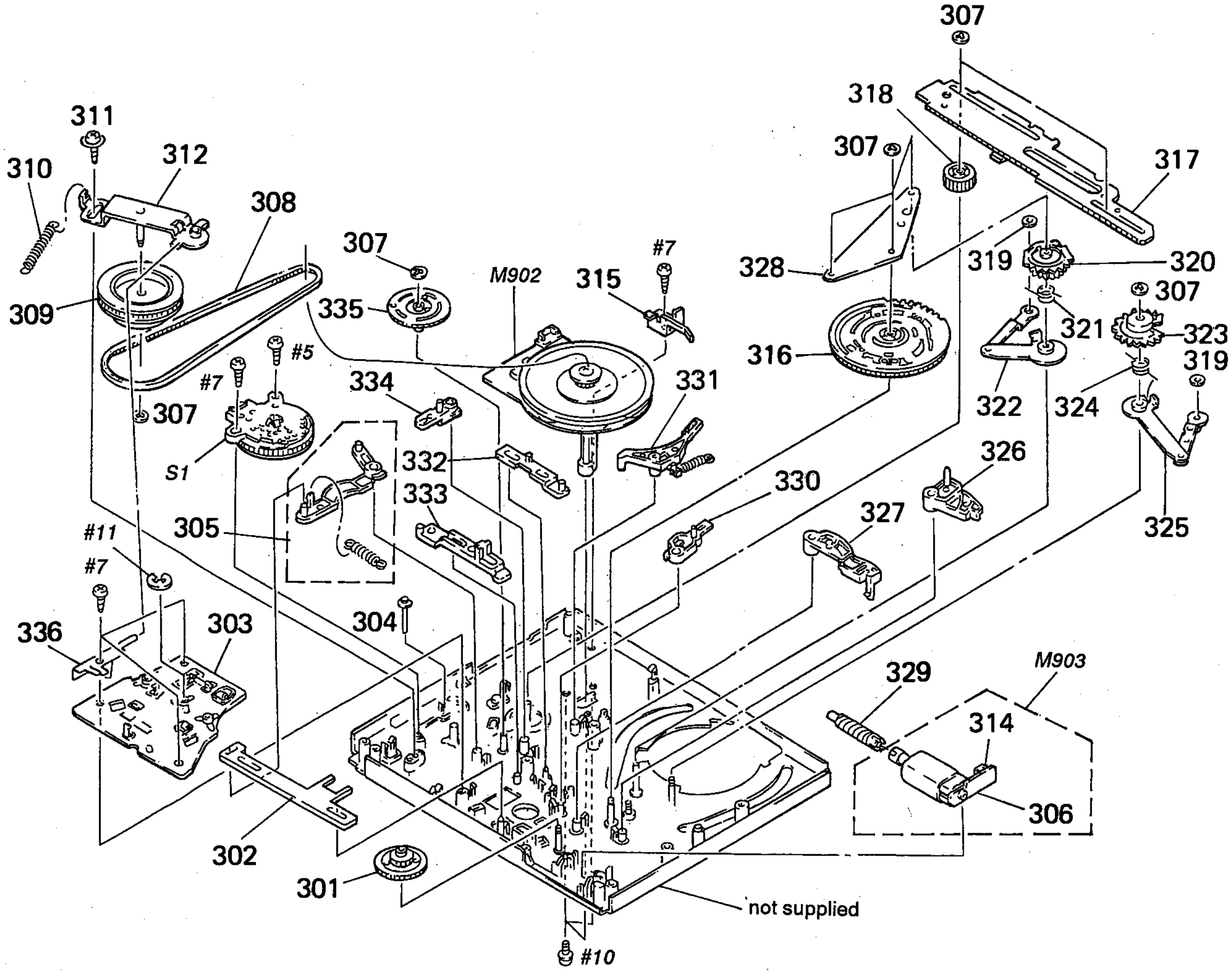
Ref. No.	Part No.	Description	Remark
201	3-701-748-00	CLAMP	
202	X-3727-776-1	ARM ASSY, PENDULUM	
203	3-669-595-00	WASHER (2), STOPPER	
204	3-736-172-02	RELEASE, LOCK, REEL	
205	X-3727-795-1	GEAR ASSY, RELAY	
206	3-736-074-01	RETAINER (SMALL), THRUST	
207	3-736-037-01	GEAR, REW	
208	X-3727-789-1	TABLE ASSY, REEL	
209	3-738-212-21	RETAINER, THRUST, REEL TABLE	
210	X-3733-335-1	BRAKE ASSY (AT), T SOFT	
211	3-736-105-01	ARM, REV BRAKE	
212	3-736-143-01	GEAR, RVS CAM	
213	X-3942-218-1	ARM ASSY, RVS	
214	3-736-740-01	NUT (M2X0.25), NYLON	
215	3-736-116-01	GEAR, COMMUNICATION	
216	X-3727-770-1	PINCH ROLLER BLOCK ASSY	
217	3-744-227-01	SPRING, FL GROUND	
218	3-952-182-01	CAM, ELEVATOR	
219	3-943-700-01	GEAR, PRESS CAM	
220	3-946-652-01	OPENER, LID	
221	3-738-250-01	SCREW, AC ADJUSTMENT	
222	3-736-069-01	RETAINER, SPRING	
223	3-739-621-01	SPRING, COMPRESSION	
224	3-736-020-11	SPRING, COMPRESSION	
225	3-736-024-01	SPRING, TENSION (FOR T SOFT BRAKE)	
226	3-736-025-01	SPRING, TENSION (REW BRAKE)	

5-1-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
* 251	A-6759-483-A	TAKE-UP BLOCK ASSY, S	
252	X-3727-773-1	ARM ASSY (S), SOFT BRAKE	
253	3-738-212-21	RETAINER, THRUST, REEL TABLE	
254	X-3941-194-1	TABLE ASSY, REEL, S	
255	X-3727-772-5	ARM ASSY, TENSION REGULATOR	
256	X-3727-797-1	BAND ASSY, TENSION REGULATOR	
257	X-3272-786-1	SHUTTLE (LEFT) ASSY	
258	X-3733-301-1	ROLLER ASSY, GUIDE	
259	X-3942-897-1	BASE ASSY, STABILIZER	
260	1-543-647-11	HEAD, FE	
262	3-741-925-01	RING, RETAINING	
263	3-946-129-01	B STABLIZER	
264	X-3743-517-1	LEVER ASSY, RELEASE, C ROLLER	
265	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT	
266	3-942-866-01	NUT (M3)(3X0.5), NYLON	
267	A-6761-129-C	HEAD BLOCK ASSY, ACE	
268	3-946-148-01	SPRING, TORSION	
269	3-739-621-01	SPRING, COMPRESSION	
270	X-3729-926-1	BRAKE ASSY (2), T	
271	3-736-745-01	SPRING, TENSION	
272	X-3733-336-2	BRAKE ASSY (2)AT, S	
273	3-738-284-01	SPRING, TENSION	
274	X-3727-791-2	DRUM (BASE) ASSY	
275	3-736-073-01	SLIDER, POLYETHYLENE	
276	A-6747-267-A	ARM BLOCK ASSY (S), C ROLLER	
277	3-736-733-02	FLANGE, 7 GUIDE	
278	3-736-730-01	SLEEVE, #7 GUIDE	
279	3-749-099-01	SPRING (#7 GUIDE), COMPRESSION	
280	X-3727-787-1	SHUTTLE (RIGHT) ASSY	
281	X-3727-788-1	ROLLER ASSY, GUIDE, #2	
282	8-848-576-01	DRUM ASSY, ROTARY UPPER (DZR-45-R)(770HF/771HF)	
282	8-848-581-01	DRUM ASSY, ROTARY UPPER (DZR-49-R)(920HF)	
283	2-643-205-01	SCREW (PSW3X8)	
284	3-736-047-01	SPRING, TENSION (S SOFT)	
285	3-733-389-01	SPRING, TENSION (TENSION REGULATOR AT)	
286	3-738-221-01	SPRING, TENSION (MAIN BRKE 1)	
287	3-738-220-01	SPRING, TENSION (MAIN BRKE 2)	
M901	8-848-575-11	DRUM ASSY DZH-45A-R (770HF/771HF)	
M901	8-848-580-11	DRUM ASSY DZH-49A-R (920HF)	

5-1-6. MECHANISM CHASSIS ASSEMBLY (3)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Ref. No.	Part No.	Description	Remark
301	3-736-015-01	WHEEL (CAM), WORM	
302	3-736-158-01	PLATE, SLIDE, PENDULUM	
303	A-6739-096-A	CHASSIS BLOCK ASSY, SUB	
304	3-736-091-01	PIN, SWITCH	
305	X-3729-924-1	ARM ASSY, PENDULUM FUNCTION	
* 306	1-633-460-11	CA-41 BOARD	
307	3-669-595-00	WASHER (2), STOPPER	
308	3-736-013-01	BELT, TIMING	
309	X-3727-782-1	PULLEY ASSY	
310	3-736-089-01	SPRING, TENSION	
311	3-749-796-11	SCREW, TAPPING +BVTP WASHER	
312	X-3727-761-1	ARM ASSY, ADJUSTMENT	
314	1-564-013-41	PIN, CONNECTOR 3P	
315	3-736-744-01	RETAINER, ROTOR	
316	3-736-176-01	GEAR, CAM	
317	3-736-177-01	PLATE, SLIDE, MODE	
318	3-733-394-01	GEAR, RVS RELAY	
319	3-736-069-01	RETAINER, SPRING	
320	3-736-148-01	GEAR (RIGHT), THREADING	
321	3-736-092-01	SPRING (RIGHT), TORSION	
322	X-3727-777-1	ARM (RIGHT) ASSY, LOADING	
323	3-736-147-01	GEAR (LEFT), THREADING	
324	3-736-040-01	SPRING (LEFT), TORSION	
325	X-3727-778-1	ARM (LEFT) ASSY, LOADING	
326	3-736-142-01	ARM, TENSION REGULATOR FUNCTION	
327	3-736-140-01	ARM, S TAKE-UP	
328	3-733-396-01	HOLDER, CAM GEAR	
329	3-733-395-01	GEAR (CAM), WORM	
330	3-733-397-01	ARM, BRAKE FUNCTION	
331	X-3727-769-1	BRAKE ASSY, CAP	
332	3-733-398-01	PLATE, SLIDE, BRAKE	
333	3-736-103-01	PLATE, SLIDE, LIMITER	
334	3-736-016-01	ARM, LIMITER FUNCTION	
335	3-736-170-01	GEAR, RKB CAM	
336	3-741-950-01	SPRING PLATE, SC GROUND (AT)	
M903	X-3733-302-1	MOTOR ASSY, CAM	
M902	8-835-489-01	MOTOR, DC U-26K	
S1	1-571-920-11	SWITCH, ROTARY (CAM ENCODER)	

5-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC..
  uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Abbreviafions
  CND: Canadian
  MX: Mexican
  PL: Philppine
  CS: Chilean
  JE: Tourist

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	A-6781-260-A	CB-44 BOARD, COMPLETE ********************* (Ref.NO. 4,000 Series)	
		< CAPACITOR >	
C001	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C002	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C003	1-163-059-00	CERAMIC CHIP 0.01uF 10%	50V
C006	1-124-443-00	ELECT 100uF 20%	10V
C031	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C032	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C033	1-163-135-00	CERAMIC CHIP 560PF 5%	50V
C034	1-124-126-00	ELECT 47uF 20%	10V
C035	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C036	1-163-019-00	CERAMIC CHIP 0.0068uF 10%	50V
C051	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C053	1-163-129-00	CERAMIC CHIP 330PF 5%	50V
C054	1-163-109-00	CERAMIC CHIP 47PF 5%	50V
C071	1-124-925-11	ELECT 2.2uF 20%	100V
C072	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C073	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C074	1-163-139-00	CERAMIC CHIP 820PF 5%	50V
C075	1-124-903-11	ELECT 1uF 20%	50V
C076	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
* CN001	1-573-827-11	CONNECTOR, BOARD TO BOARD 13P	
		< DIODE >	
D003	8-719-200-82	DIODE 11ES2	
D051	8-719-911-19	DIODE 1SS119 (770HF/771HF/920HF:US, CND, MX)	
		< IC >	
IC001	8-752-850-92	IC CXP50116-440Q	
IC031	8-759-253-01	IC SC420134B (MC68HC05)	
IC071	8-759-164-09	IC LA7218M	

Ref. No.	Part No.	Description	Remark
		< JUMPER RESISTOR >	
JR002	1-216-296-00	METAL CHIP 0 5%	1/8W
JR003	1-216-296-00	METAL CHIP 0 5%	1/8W
JR006	1-216-296-00	METAL CHIP 0 5%	1/8W
JR007	1-216-295-00	METAL CHIP 0 5%	1/10W
		< COIL >	
L001	1-410-509-11	INDUCTOR 10uH	
L002	1-410-509-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q001	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q002	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q003	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q004	8-729-421-19	TRANSISTOR UN2213	
Q053	8-729-422-27	TRANSISTOR 2SD601A-Q	
		< RESISTOR >	
R001	1-249-417-11	CARBON 1K 5%	1/4W F
R002	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R003	1-216-049-00	METAL CHIP 1K 5%	1/10W
R004	1-216-089-91	METAL GLAZE 47K 5%	1/10W
R005	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R006	1-216-001-00	METAL CHIP 10 5%	1/10W
R007	1-216-049-00	METAL CHIP 1K 5%	1/10W
R008	1-249-417-11	CARBON 1K 5%	1/4W F
R009	1-216-049-00	METAL CHIP 1K 5%	1/10W
R010	1-216-049-00	METAL CHIP 1K 5%	1/10W
R011	1-216-049-00	METAL CHIP 1K 5%	1/10W
R012	1-216-049-00	METAL CHIP 1K 5%	1/10W
R013	1-216-049-00	METAL CHIP 1K 5%	1/10W
R014	1-216-049-00	METAL CHIP 1K 5%	1/10W
R015	1-216-073-00	METAL CHIP 10K 5%	1/10W
R031	1-249-417-11	CARBON 1K 5%	1/4W F
R032	1-216-049-00	METAL CHIP 1K 5%	1/10W
R033	1-249-414-11	CARBON 560 5%	1/4W F
R034	1-216-049-00	METAL CHIP 1K 5%	1/10W
R035	1-216-049-00	METAL CHIP 1K 5%	1/10W

Ref. No.	Part No.	Description	Remark
R036	1-216-295-00	METAL CHIP 0 5% 1/10W	
R037	1-216-295-00	METAL CHIP 0 5% 1/10W	
R038	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R039	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R057	1-216-043-00	METAL CHIP 560 5% 1/10W	
R058	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R059	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R071	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R072	1-216-043-00	METAL CHIP 560 5% 1/10W	
R073	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
		< VIBRATOR >	
X001	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)	
X031	1-579-125-11	VIBRATOR, CERAMIC (14.3MHz)	
X071	1-577-165-11	VIBLATOR, CERAMIC (500KHz)	

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* A-6754-645-A CG-20 BOARD, COMPLETE

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(Ref. NO. 4,000 Series)

		< CAPACITOR >	
C406	1-124-589-11	ELECT 47uF 20% 16V	
C407	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C408	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C409	1-124-126-00	ELECT 47uF 20% 10V	
C410	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	
C411	1-163-235-11	CERAMIC CHIP 22PF 5% 50V	
C412	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C413	1-163-235-11	CERAMIC CHIP 22PF 5% 50V	
C416	1-124-257-00	ELECT 2.2uF 20% 50V	
C417	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C418	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C419	1-124-589-11	ELECT 47uF 20% 16V	
C420	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C421	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C422	1-126-301-11	ELECT 1uF 20% 50V	
C423	1-163-139-00	CERAMIC CHIP 820PF 5% 50V	
C424	1-124-589-11	ELECT 47uF 20% 16V	
C425	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C427	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C440	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C451	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
		< CONNECTOR >	
* CN401	1-573-827-11	CONNECTOR, BOARD TO BOARD 13P	
		< DIODE >	
D402	8-719-801-48	DIODE 1SS193	

Ref. No.	Part No.	Description	Remark
		< IC >	
IC401	8-759-247-43	IC MB90089PF-106-ER	
IC402	8-759-164-09	IC LA7218M	
		< JUMPER RESISTOR >	
JR401	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR403	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR404	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L401	1-408-982-11	INDUCTOR 100uH	
L403	1-408-974-21	INDUCTOR 22uH	
L404	1-408-982-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q404	8-729-216-22	TRANSISTOR 2SA1162-G	
Q406	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R401	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R405	1-216-295-00	METAL CHIP 0 5% 1/10W	
R406	1-216-295-00	METAL CHIP 0 5% 1/10W	
R407	1-216-043-00	METAL CHIP 560 5% 1/10W	
R408	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R409	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R410	1-216-043-00	METAL CHIP 560 5% 1/10W	
R411	1-216-025-00	METAL CHIP 100 5% 1/10W	
R414	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R415	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R416	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R417	1-216-033-00	METAL CHIP 220 5% 1/10W	
R423	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< VIBRATOR >	
X401	1-577-381-11	VIBRATOR, CRYSTAL (14.3MHz)	
X402	1-577-165-11	VIBLATOR, CERAMIC (500KHz)	

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* A-6721-586-A HF-34 BOARD, COMPLETE

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(Ref. NO. 6,000 Series)

		< CAPACITOR >	
C101	1-124-907-11	ELECT 10uF 20% 50V	
C102	1-124-907-11	ELECT 10uF 20% 50V	
C103	1-124-927-11	ELECT 4.7uF 20% 100V	
C104	1-124-927-11	ELECT 4.7uF 20% 100V	
C105	1-124-126-00	ELECT 47uF 20% 10V	

Ref. No.	Part No.	Description			Remark
C106	1-124-126-00	ELECT	47uF	20%	10V
C107	1-124-126-00	ELECT	47uF	20%	10V
C108	1-126-962-11	ELECT	3.3uF	20%	50V
C109	1-126-962-11	ELECT	3.3uF	20%	50V
C110	1-126-962-11	ELECT	3.3uF	20%	50V
C111	1-126-962-11	ELECT	3.3uF	20%	50V
C112	1-126-233-11	ELECT	22uF	20%	50V
C113	1-126-233-11	ELECT	22uF	20%	50V
C114	1-124-252-00	ELECT	0.33uF	20%	50V
C115	1-124-443-00	ELECT	100uF	20%	10V
C116	1-124-443-00	ELECT	100uF	20%	10V
C117	1-124-034-51	ELECT	33uF	20%	16V
C118	1-137-372-11	FILM	0.022uF	5%	50V
C119	1-137-372-11	FILM	0.022uF	5%	50V
C120	1-137-370-11	FILM	0.01uF	5%	50V
C121	1-137-370-11	FILM	0.01uF	5%	50V
C122	1-137-367-11	FILM	0.0033uF	5%	50V
C123	1-137-367-11	FILM	0.0033uF	5%	50V
C124	1-137-364-11	FILM	0.001uF	5%	50V
C125	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C126	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C127	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C128	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C129	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C130	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C131	1-137-372-11	FILM	0.022uF	5%	50V
C132	1-137-372-11	FILM	0.022uF	5%	50V
C133	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C134	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C135	1-163-038-00	CERAMIC CHIP	0.1uF		25V

< CONNECTOR >

* CN101	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P
* CN102	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P
* CN103	1-564-013-11	PIN, CONNECTOR 3P

< DIODE >

D101	8-719-404-46	DIODE	MA110

< IC >

IC101	8-759-188-81	IC	XLH7776K-VP

< TRANSISTOR >

Q101	8-729-804-41	TRANSISTOR	2SB1122-S
Q102	8-729-807-12	TRANSISTOR	2SD1802-S

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R101	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R102	1-216-678-11	METAL CHIP	13K	0.5%	1/10W
R103	1-216-083-00	METAL CHIP	27K	5%	1/10W
R104	1-216-081-00	METAL CHIP	22K	5%	1/10W
R105	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R106	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R107	1-216-083-00	METAL CHIP	27K	5%	1/10W
R108	1-216-075-00	METAL CHIP	12K	5%	1/10W
R109	1-216-075-00	METAL CHIP	12K	5%	1/10W
R110	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R111	1-216-105-00	METAL CHIP	220K	5%	1/10W
R112	1-216-105-00	METAL CHIP	220K	5%	1/10W
R113	1-216-109-00	METAL CHIP	330K	5%	1/10W
R114	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R115	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R116	1-216-077-00	METAL CHIP	15K	5%	1/10W
R118	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R120	1-216-295-00	METAL CHIP	0	5%	1/10W
R123	1-216-295-00	METAL CHIP	0	5%	1/10W
R124	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R125	1-216-049-00	METAL CHIP	1K	5%	1/10W
R130	1-216-049-00	METAL CHIP	1K	5%	1/10W

< VARIABLE RESISTOR >

RV101	1-241-764-11	RES, ADJ, CERMET	10K
RV102	1-241-763-11	RES, ADJ, CERMET	4.7K
RV103	1-241-763-11	RES, ADJ, CERMET	4.7K

****

* A-6754-644-A IO-49 BOARD, COMPLETE

****

(Ref.NO. 4,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C701	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C702	1-124-126-00	ELECT	47uF	20%	10V
C707	1-124-126-00	ELECT	47uF	20%	10V
C710	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C751	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C752	1-124-126-00	ELECT	47uF	20%	10V
C757	1-124-126-00	ELECT	47uF	20%	10V
C901	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C902	1-124-477-11	ELECT	47uF	20%	25V
C903	1-124-126-00	ELECT	47uF	20%	10V
C904	1-124-472-11	ELECT	470uF	20%	10V

SECTION 6

INTERFACE, IC PIN FUNCTION DESCRIPTION

6-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
$\overline{\text{V•PB}}$	MA-181 IC203 (95)	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-181 IC203 (85)	O	L	L	L	L	HI-Z (2.5 V)	*1	*10	*5	*5	L	L
RF SW P (SW30)	MA-181 IC203 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-181 IC203 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-181 IC203 (91)	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
ENV GAIN	MA-181 IC203 (92)	O	*11	*11	*11	*7	*7	*7	*7	*7	*7	*11	*11
REC•P	MA-181 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-181 IC203 (98)	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-181 IC203 (66)	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
OSD MUTE	MA-181 IC203 (71)	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
E TAPE	MA-181 IC203 ㊾	O	L	L	L	*12	*12	*12	*12	*12	*12	L	L
NTSC	MA-181 IC203 ㉗	O	L	L	L	L	L	L	L	L	L	L	L
$\overline{\text{3.58NTSC}}$	MA-181 IC203 ㉖	O	L	L	L	L	L	L	L	L	L	L	L
JOG	MA-181 IC203 (97)	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-181 IC203 (76)	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).
*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL signal is not generated.
*4. V period "H" pulse.
*5. "H" in SP mode. "L" in LP/EP mode.
*6. Selected by REC mode. SP mode: "L".
*7. Selected by tape recording mode.

Signal \ Model	SP	LP	EP
$\overline{\text{SP}}$ (91)	L	H	H
ENV GAIN (92)	L	L	H

*8. Composite Sync signal (positive).
*9. "H" when menu screen or blue back screen.
*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.
*11. Selected by REC mode: "H" EP mode.
*12. "L" when APC is off. "H" when APC is ON and "HG tape" is used.
*13. "H" during APC measurement.

6-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE	PB INDEX WRT/ERS
REC CTL	MA-181 IC203 ⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-181 IC203 ㊳	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	
STEP PLS	MA-181 IC203 ㉔	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-181 IC203 ㉘	O	L	L	L	L	L	L	L	L	L	L	L	H	H	H
INDEX	MA-181 IC203 ㉚	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
PB CTL	MA-181 IC203 (67)	I	H/L	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H/L	
VD CTL	MA-181 IC203 (71)	I	H/L	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H/L	
DRUM PG	MA-181 IC203 (68)	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRUM FG	MA-181 IC203 (69)	I	H/L	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-181 IC203 (70)	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-181 IC203 (73)	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRUM DA	MA-181 IC203 (74)	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-181 IC203 ㉙	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction STEP drive.

6-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

Signal	Pin No.	I/O	HI-SPEED REW	EJECTED	CASSETTE LOADING	CASSETTE UNLOAD-ING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE
CAM *1	MA-181 IC203 ⑫	O	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L
LOAD	MA-181 IC203 ⑭	O	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CW/CCW	MA-181 IC203 ⑬	O			H	L	H	L											
MODE 1	MA-181 IC203 (58)	I	H	L	L	L	H	H	L	H	H	H	L	L	H	H	H	H	L
MODE 2	MA-181 IC203 (57)	I	L	H	H	H	H	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-181 IC203 (56)	I	H	H	H	H	L	L	L	L	L	H	H	H	H	H	L	H	H
MODE 4	MA-181 IC203 (55)	I	H	H	H	H	H	H	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-181 IC203 ⑮	I	*2	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
C-UP/DOWN	MA-181 IC203 ⑯	I	L	H	H→L	L→H	L	L	L	L	L	L	L	L	L	L	L	L	L
TREEL FG	MA-181 IC203 (64)	I	*3	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-181 IC203 (63)	I	*3	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END LED	MA-181 IC203 ㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-181 IC203 ㉝	O (O.D)	*1							*1	*1			*6		*1	*1		
CAP TRQ 2	MA-181 IC203 ㉞	O (O.D)								*1	*1								
CAP RVS	MA-181 IC203 (72)	O	H	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
T SENS	MA-181 IC203 ⑰	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-181 IC203 ⑱	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "L" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

6-4. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	I/O level
$\overline{\text{COSMO•RESET}}$	MA-181 IC203 ㊵	I	Normally "H". "L" when service interruption is detected or restored.
$\overline{\text{COSMO•CS}}$	MA-181 IC203 ㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
SI•BUS	MA-181 IC203 ㊺	I	Serial communication data from timer microprocessor. V period "L" pulse.
SO•BUS	MA-181 IC203 ㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
S CLK	MA-181 IC203 ㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-5. SYSTEM CONTROL – AUDIO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
AF ENVELOP	MA-181 IC203 (61)	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-181 IC203 ⑪	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-181 IC203 ㊲	O (O.D)	L	L	L	*4	H	H	H	H	H	L	L
$\overline{\text{SP}}$	MA-181 IC203 (91)	O	*2	*2	*2	*3	*3	*3	*3	*3	*3	*2	*2
NA REC•$\overline{\text{P}}$	MA-181 IC203 ⑩	O	L	L	L	L	L	L	L	L	L	H	L
AF REC•$\overline{\text{P}}$	MA-181 IC203 ④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-181 IC203 (100)	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
AF SW POSITION	MA-181 IC203 (51)	I	Input terminal for AF switching position adjustment.										
FULL $\overline{\text{ERS}}$	MA-181 IC203 ㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.
*2. Selected by REC mode selector. SP mode: "L".
*3. Selected by tape recording mode. SP mode: "L".
*4. Nomaly "L", "H" when there is not CTL pulse.

6-6. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-181 IC203 (79)	O	*1. Input select control signal.
LINE 2	MA-181 IC203 (82)	O	

*1.

Signal \ Input	Tuner	LINE 1	LINE 2
LINE 1 (79)	L	H	L
LINE 2 (82)	L	L	H

6-7. SERVO SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MA-181 BOARD IC203 CXP80724-083Q)

Pin No.	Pin Name	I/O	Function
1	RF SWP	O	Video switching pulse output
2	Q VD	O	Quasi VD pulse output
3	Q HD ENBL	O	Quasi HD voltage level control
4	AF REC $\overline{\text{P}}$	O	"H" output when hi-fi audio REC
5	RECP	O	"H" output when video REC·PAUSE
6	FE ON	O	Flaying erase ON/OFF (SLV-920HF)
7	REC CTL	O	REC CTL output
8	INT VD	O	Internal VD signal. Not used
9		O	Not used
10		O	Not used
11	NA PB	O	"H" when normal audio playback
12	CAM	O	CAM motor select
13	CW	O	Clockwise/counterclockwise signal output
14	LOAD	O	Loading motor select
15	CIN/REC PRF	I	Erasing protection tab, cassette IN detection input
16	C DOWN	I	Cassette up/down detection input
17	T SENS	I	Take up end sensor input
18	S SENS	I	Supply end sensor input
19	MOD CONT	O	RF modulator ON/OFF control
20	BS-MONI	O	"M" when BS monitor. Not used
21	MESECAM	I	"L" in NT mode. Not used
22	SECAM	I	"L" in NT mode. Not used
23	VPB	O	VPB reverse
24	STEP PLS	O	"H" when capstan step drive
25	3.58/4.43 NTSC	O	"H"
26	$\overline{\text{3.58 NTSC}}$	O	"L"
27	$\overline{\text{NTSC}}$	O	"L"
28	E-TAPE	O	"H" when HG tape using
29	BS BILING	O	"H" when BS bilingual. Not used
30	C+CONT	O	CANAL + control. Not used
31		O	Not used
32	END LED	O	END sensor LED drive output
33	CAP TPQ2	O	Capstan current control. "L" when FF/REW ➡ stop
34	CAP TPQ1	O	Capstan current control. "L" when slow down
35	PAL	O	"L"
36	$\overline{\text{FULL ERS}}$	O	"L" when full erase head operation
37	A MUTE	O	Audio MUTE output
38	$\overline{\text{CAP STOP}}$	O	Capstan STOP signal output
39	MP	I	Fixed at "L" level
40	$\overline{\text{COSMO RST}}$	I	System reset input
41			GND
42	XTAL		System clock 12 MHz
43	EXTAL		
44	$\overline{\text{COSMO CS}}$	I	Chip select signal
45	SI0	I	Signal for serial communication
46	SO0	O	
47	SCLK	I	
48	L METER	O	Not used
49	R METER	O	Not used
50	NTPB SW	I	Not used
51	AF SW POSI	I	VR input for hi-fi switching pulse position adjustment
52	AVss		GND
53	AVREF		AD port reference input. UNSW 5 V
54	AVDD		UNSW 5 V
55	MODE4	I	Mechanism section CAM encoder input
56	MODE3	I	
57	MODE2	I	
58	MODE1	I	
59	DEW	I	DEW sensor input. Not used
60	RF ENV	I	Video RF envelope input
61	AF ENV	I	hi-fi audio RF envelope input
62	RF SW POSI	I	VR input for RF switching position adjustment
63	SREEL FG	I	S reel sensor input
64	TREEL FG	I	T reel sensor input
65	NT JUDGE	I	Not used
66	V SYNC	I	Composite sync input
67	PB CTL	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	OSD MUTE	O	"H" when blue back
72		O	Not used
73	CAP D/A	O	Capstan error D/A output
74	DRM D/A	O	Drum error D/A output
75	$\overline{\text{EP}}$	O	"L" when EP mode REC
76	ORC SETTEI	O	"H" when ORC measurement
77	VD CTL	I	Playback CTL input
78	AMS IN	I	Not used
79	LINE1	O	Video/audio input select signal
80	1	O	Expansion port for serial communication
81	SCK1	O	
82	LINE2	O	Video/audio input select signal
83	$\overline{\text{NA REC P}}$	I/O	"H" when recording normal audio
84	CAP RVS	I/O	Capstan reverse signal output
85	HEAD CONT	I/O	Head select control
86		I	Not used
87		O	Not used
88			GND
89			UNSW 5 V
90			Connected to UNSW 5 V
91	$\overline{\text{SP}}$	O	"L" when SP mode
92	ENV GAIN	O	RF envelope gain control
93	CTL STEP	O	CTL amp step control
94	CTL REC	O	CTL amp recording inhibition
95	$\overline{\text{V PB}}$	O	"L" when video playback
96	CTL INDEX	O	CTL amp index control
97	JOG	O	"H" when trick play mode
98	REC	O	Rise up signal of head amp recording power
99	LP HEAD	O	(PAL) Head select control
100	AF SWP	O	hi-fi switching pulse output

6-8. TIMER, TUNER, MODE CONTROL MICROPROCESSOR PIN FUNCTION (PT-95 BOARD IC401 MB89096-120)

Pin No.	Pin Name	I/O	Function
1	CL1		Connected to oscillator for clock
2	CL0		Connected to oscillator for clock
3	MOD0		
4	MOD1		
5	X0		Connected to main oscilltor
6	X1		Connected to main oscilltor
7	Vss		
8	$\overline{\text{RESET}}$	I	Reset signal in
9	FF	O	FF LED
10	REW	O	REW LED
11	H-S-REW	O	HI-SPEED REW LED
12	B. LIGHT CONT	O	LCD back light ON/OFF control signal
13			Not used
14	$\overline{\text{LCD CS}}$	O	LCD driver chip select signal
15	$\overline{\text{COSMO RESET}}$	O	System controller reset signal
16	$\overline{\text{CC CS}}$	O	Character generator chip select signal
17	$\overline{\text{POWER FAIL}}$	I	Power failure detect sgnal in
18	$\overline{\text{V SYNC}}$	I	V sync. signal in
19	POWER CONT	O	Power ON/OFF control signal
20	$\overline{\text{COSMO CS}}$	O	System controller chip select signal
21	H DET	I	Video signal detect signal in
22			
23	$\overline{\text{STEREO}}$	I	Tuner audio mode in (Stereo)
24			Not used
25	$\overline{\text{PAUSE}}$	O	PAUSE LED
26	$\overline{\text{TIMER}}$	O	TIMER RED
27	$\overline{\text{REC}}$	O	REC RED
28	CMOD		
29	TA MUTE	O	Tuner audio mute control signal
30	F MONO	O	Tuner audio select
31	A PRST	O	Sensitivity select for auto presetting
32	SIRCS IN	I	SIRCS signal in
33	PLL CLOCK	O	Tuner clock signal
34	PLL DATA	O	Tuner data signal
35	PLL ENABLE	O	Tuner enable signal
36	SAP/$\overline{\text{MAIN}}$	O	Normal audio SAP/MAIN select control
37	$\overline{\text{CB RST}}$	O	Cable Box microcomputer reset
38	$\overline{\text{CB CS}}$	O	Cable Box microcomputer chip select
39-52	N. C.		
53	V1dp		
54-57	N. C.		
58	Vss		
59-66	N. C.		
67	Vcc		
68-74	N. C.		
75	$\overline{\text{EDS CS}}$	O	EDS microcomputer chip select
76	POWER CONT 2	O	Power supply control signal for EDS
77	SO BUS	I	Serial data input
78	SI BUS	O	Serial deata output
79	S CLK	O	Clock for serial communication
80	MEM CS	O	E^2 PROM chip select signal
81	MEM CLK	O	E^2 PROM clock
82	MEM DATA	O	E^2 PROM data
83	AVss		
84	AFT	I	Tuner AFT input
85			Not used
86	A/D2	I	Key reading A/D input
87	A/D3	I	Key reading A/D input
88	A/D4	I	Key reading A/D input
89	A/D5	I	Key reading A/D input
90	A/D6	I	Key reading A/D input
91	A/D7	I	Key reading A/D input
92	AVcc		
93	FWD	O	Forward playback LED
94	DEST 1	I	Destination discriminating A/D input
95	DEST 2	I	Destination discriminating A/D input
96	RVS	O	Reverse playback LED
97	–		
98	B. L LED	O	LCD back light LED control output
99	BUZZER	O	Buzzre out
100	Vcc		

6-9. EDS CONTROL MICROPROCESSOR PIN FUNCTION
(CB-44 BOARD IC031 MC68HC05CC1)

Pin No.	Pin Name	I/O	Function
1	$\overline{\text{COSMO RESET}}$	I	Reset signal in
2	$\overline{\text{IRQ}}$	I	EDS chip select signal input from mode control microprocessor
3, 4	PC4, PC5		Not used
5-12	PA0-PA7		Not used
13	VIDEO IN	I	Video signal for closed caption input
14	PD0		Not used
15	SDL	I/O	Serial data signal
16	SCL	I/O	Serial clock signal
17-19	PD3-PD5		Not used
20	V_{DD}		VDD
21	V_{ss}		GND
22, 23	PD6, PD7		Not used
24	$\overline{\text{EXH SYNC}}$	I	Horizontal sync. signal input
25	$\overline{\text{EXV SYNC}}$	I	Vertical sync. signal input
26, 27	R1 VCO	I	PLL oscillating circuit control signal input
28, 29	PC0, PC6		Not used
30-37	DA0/PB0 DA7/PB7		Not used
38-40	PC1-PC3		Not used
41	OSC2	O	Connected to oscillator
42	OSC1	I	Connected to oscillator

SECTION 7
ELECTRICAL ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for adjustments on Page 7-8.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT Ⅱ.

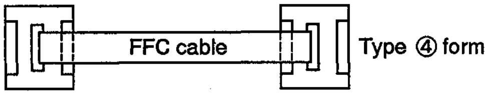
7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (min. 8 digits)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion factor meter
10) Voice multiple signal generator
11) Alignment tape
    Part Code: H7099046H (MH-1)
    Part Code: H7099153H (Hi-Fi 400 Hz)
12) Extension cables (See page 7-3 for using location)



① CG-20 (CN401) ↔ PT-95 (CN405)
(13 pins J-6090-045-A)
② HF-34 (CN101) ↔ MA-181 (CN406)
(11 pins J-6090-047-A)
③ HF-34 (CN102) ↔ MA-181 (CN405)
(11 pins J-6090-047-A)
④ RV-33 (CN001) ↔ MA-181 (CN303)
(14 pins J-6090-044-A)
⑤ RV-33 (CN002) ↔ MA-181 (CN304)
(20 pins J-6090-043-A)

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

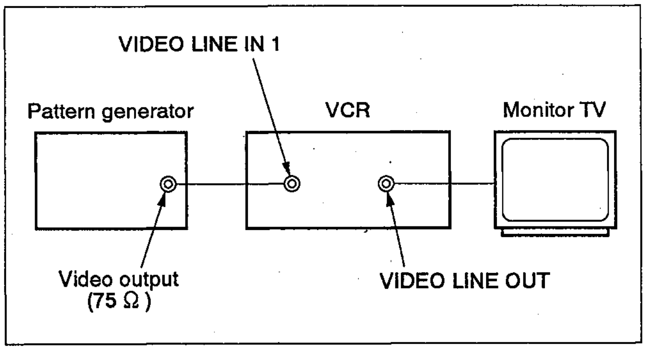


Fig. 7-2-1.

2-1-3. Set-up of Adjustment

In this adjustment, NTSC pattern generator is connected with LINE 1 input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst sigal and "red" signal are 0.30 : 0.66. Fig. 7-2. shows video signals (color bars) used in adjusting the video section.

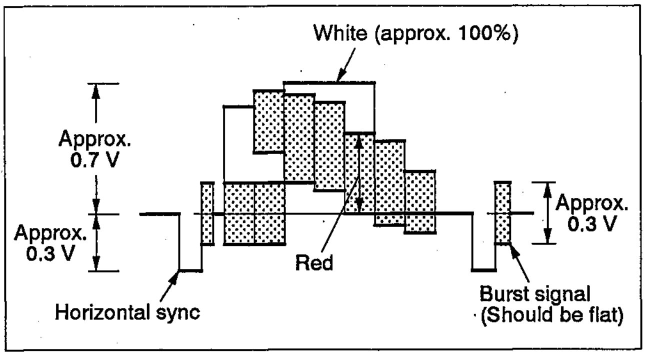


Fig. 7-2-2.

2-1-4. Alignment Tapes

〔Alignment Tape (MH-1)〕

	Mode	Time	Video signal	Audio signal
1	SP	Ten minutes	Stair-step	7 kHz
2		Five minutes	—	3 kHz
3		Ten minutes	Color	1 kHz
4		Three minutes	RF	—

〔Hi-Fi Alignment Tape〕

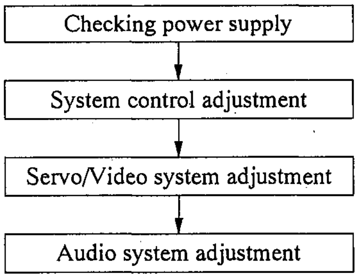
	Mode	Time	Video signal	Audio signal
1	SP	Six minutes	Monaural scope	Nomal: no signal
				HIFI: 400 Hz

2-1-5. Specified I/O Level and Impedance Input/Output Terminal

Video inputs	LINE IN : phono jacks 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kΩ , − 7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kΩ , − 4 dBs
Video outputs	LINE OUT : phono jack 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio outputs	LINE OUT : phono jack − 7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 kΩ

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.


Checking power supply
System control adjustment
Servo/Video system adjustment
Audio system adjustment

2-2. POWER SUPPLY CHECK (PT-95 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmater
UNSW 5.0 V check	
Measurement Point	Pin ⑩ of CN401
Specified Value	5.3 ± 0.2 Vdc
MTR 12 V check	
Measurement Point	Pin ⑤ of CN402
Specified Value	12.4 ± 0.5 Vdc
DC 42 V check	
Measurement Point	C187 ⊕ side
Specified Value	42.0 ± 3.0 Vdc
UNSW − 8 V check	
Measurement Point	Pin ⑨ of CN401
Specified Value	− 9.1 ± 0.8 Vdc
AN 12 V check	
Measurement Point	Pin ⑧ of CN401
Specified Value	12.0 ± 0.3 Vdc
SW 9 V check	
Measurement Point	Pin ⑮ of CN401
Specified Value	9.0 ± 0.3 Vdc

Checking Method:

1) Confirm that each voltage meets its specified value.

2-3. SYSTEM CONTROL ADJUSTMENT

2-3-1. Clock Adjustment (PT-95 Board)

Purpose:

Adjust to improve the clock precision. When it is out of order, errors gradually increases.

Measurement point	Pin (99) of IC401
Measurement Equipment	Frequency counter (Interval counter mode)
Adjustment Element	CT412
Specified Value	0.1249995 ± 0.0000005 sec

Note: Do not adjustment CT412 except when replacing IC401.

Adjustment Method :

1) Connect Pin (96) of IC401 to ground. (The set goes to adjusting mode.)
2) Connect the frequency counter as shown below.
3) Set oscillation frequency to the specified value using CT412.

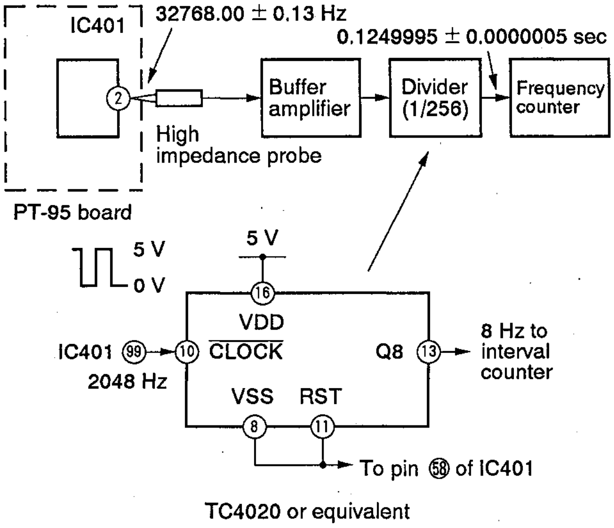

IC401
32768.00 ± 0.13 Hz
0.1249995 ± 0.0000005 sec
2
Buffer amplifier
Divider (1/256)
Frequency counter
High impedance probe
PT-95 board
5 V
0 V
5 V
16
VDD
CLOCK
IC401 (99)
10
2048 Hz
Q8
13
8 Hz to interval counter
VSS
RST
8
11
To pin (58) of IC401
TC4020 or equivalent

Fig. 7-2-3.

Adjusting Mode Setting:

- Connect 47 kΩ resistor between Pin ⑪ of CN403 and ground. (The set goes to Adjusting mode.)
- After adjusting, be sure to remove resistor.

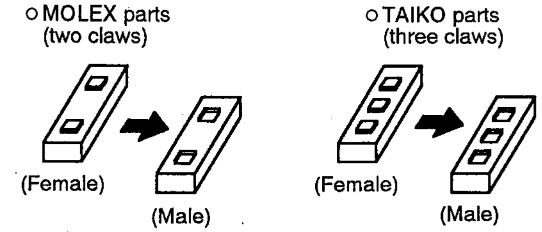
2-4. SERVO/VIDEO SYSTEM ADJUSTMENTS

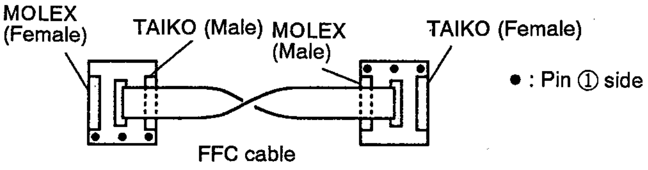
- **NOTE ON REPAIRING RV-33 BOARD**

[Servicing Jig]
MA-181 ↔ RV-33 Exension cable.
ⓐ 14 pins (J-6090-044-A) CN001 ↔ CN303
ⓑ 20 pins (J-6090-043-A) CN002 ↔ CN304

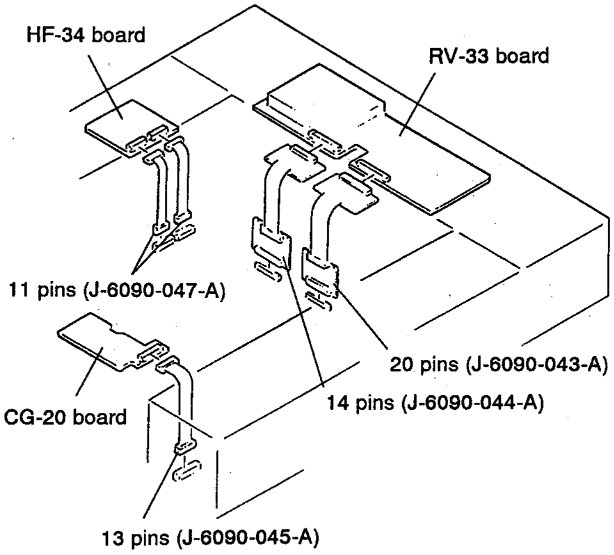
① There are two types of the connectors between MA-181 and RV-33 boards according to the manufacturing companies (TAIKO or MOLEX). They are not interchangeable.

② Servicing jigs are for common use.
When using it, please be sure to confirm the form of connectors.


○ MOLEX parts
(two claws)
○ TAIKO parts
(three claws)
(Female)
(Male)
(Female)
(Male)


MOLEX
(Female)
TAIKO (Male)
MOLEX
(Male)
TAIKO (Female)
● : Pin ① side
FFC cable

- EXTENSION CABLE USING LOCATION
(See page 7-1 for details of extension cables.)


HF-34 board
RV-33 board
11 pins (J-6090-047-A)
20 pins (J-6090-043-A)
14 pins (J-6090-044-A)
CG-20 board
13 pins (J-6090-045-A)

2-4-1. Switching Position Adjustment (MA-181 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.
Improve the interchangeability with other tapes and sets.
When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape (HiFi 400 Hz)
Measurement Point	CH1: CJ702 VIDEO LINE OUT (IO-49 board) CH2: Pin ⑳ of CN304 (RF SWP)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202
Specified Value	6.5 ± 0.5 H (410 ± 32 μsec)

Adjusting Method:

1) Adjust the tracking position to the center by pushing tracking buttons ▲, ▼ (on remote commander).
2) Check that switching position is 6.5 ± 0.5 H. (410 ± 32 μsec)
If not meet the specified value, turn RV202 and repeat steps 1) to 2).

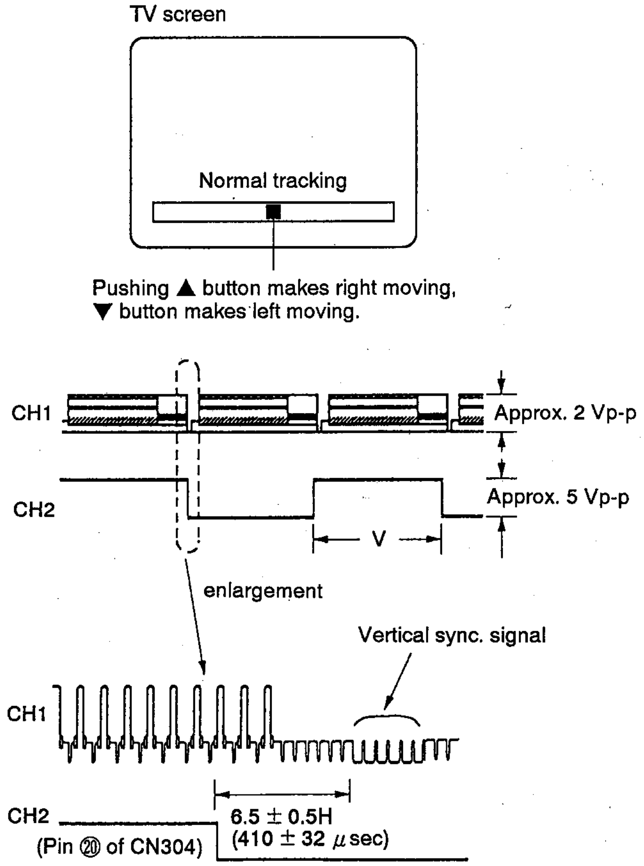

TV screen
Normal tracking
Pushing ▲ button makes right moving,
▼ button makes left moving.
CH1
Approx. 2 Vp-p
CH2
Approx. 5 Vp-p
V
enlargement
Vertical sync. signal
CH1
CH2
(Pin ⑳ of CN304)
6.5 ± 0.5H
(410 ± 32 μsec)

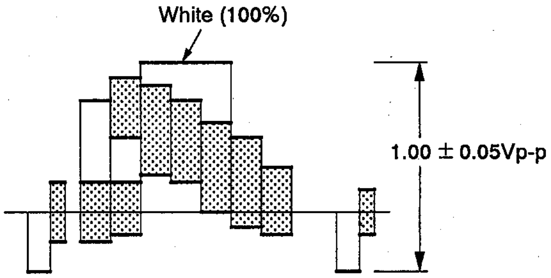
Fig. 7-2-4.

2-4-2. Sync. AGC Adjustment (RV-33 Board)

Mode	E-E
Signal	Color bar
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV001
Specified Value	1.00 ± 0.05Vp-p

Adjusting Method:

1) Adjust to 1.00 ± 0.05Vp-p with RV001.



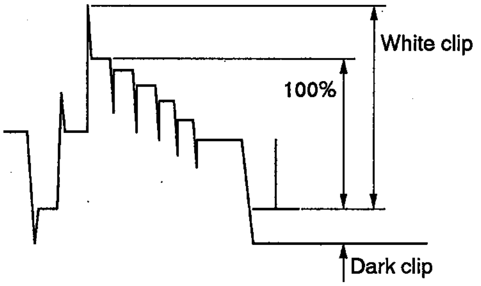
2-4-3. White Clip Adjustment (RV-33 Board)

Purpose:

Adjust the frequency of FM modulated YFM signal doesn't go too high.

When it is out of order, white goes flat and black is over-modulated.

Signal	Clor bar
Measurement Point	Pin ㊺ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV004
Specified Value	White clip and dark clip are equal to the reference waveform.



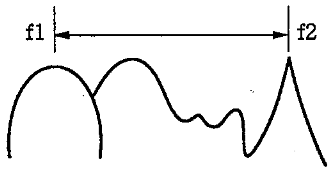
2-4-4. Carrier Deviation Adjustment (RV-33 Board)

Purpose:

Adjust FM modulating frequency for signal.

When it is out of order, black and white are over-modulated, interchangeability is lack, the screen is darkened or brightened or off.

Mode	E-E
Signal	Color bar
Measurement Point	Q034 Emitter
Measuring Instrument	Oscilloscope
Adjusting Element	RV005, 006 Alternately
Specified Value	$f_2 - f_1 = 1.0 \pm 0.05$ MHz $f_1 = 3.45 \pm 0.05$ MHz



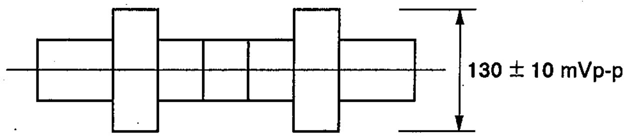
2-4-5. Recording Chroma Adjustment (RV-33 Board)

Purpose:

Adjust recording chroma level.

When it is out of order, S/N ratio of color goes bad, the picture is not colored and second sequence beat appears.

Mode	E-E
Signal	Color bar
Measurement Point	Q013 Emitter
Measuring Instrument	Oscilloscope
Adjusting Element	RV009
Specified Value	130 ± 10 mVp-p



Reference:

Adjusting level is low; Bad color S/N ratio, not colored.

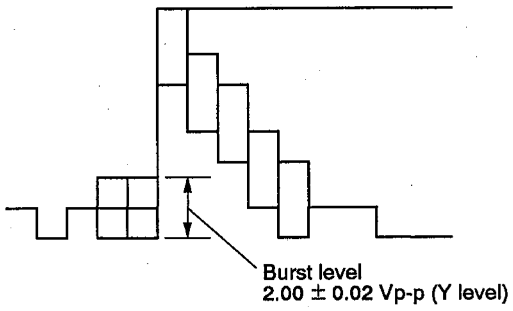
Adjusting level is high; Second sequence beat (squared noise) appears.

2-4-6. Playback Level Adjustment (RV-33 Board)

Purpose:

Adjust playback video signal level to the specification.
When it is out of order, the picture is darkened or brightened on TV screen. White goes flat.

Mode	Playback
Signal	Color bar or alignment tape
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV003
Specified Value	2.0 ± 0.02 Vp-p



Reference:

Adjusting level is low; The picture is darkened on TV screen.
Adjusting level is high; The picture is brightened on TV screen. White goes flat.

2-4-7. VCO Adjustment (RV-33 Board)

Purpose:

Adjust to lock the color surely.
When it is out of order, the picture doesn't colored.

Mode	PB
Signal	Color bar
Measurement Point	Pin (55) of IC001
Measuring Instrument	Digital voltmeter
Adjusting Element	T001
Specified Value	2.5 ± 0.1 Vdc

2-5. AUDIO SYSTEM ADJUSTMENTS

- Adjust both Lch and Rch.

[Connection]

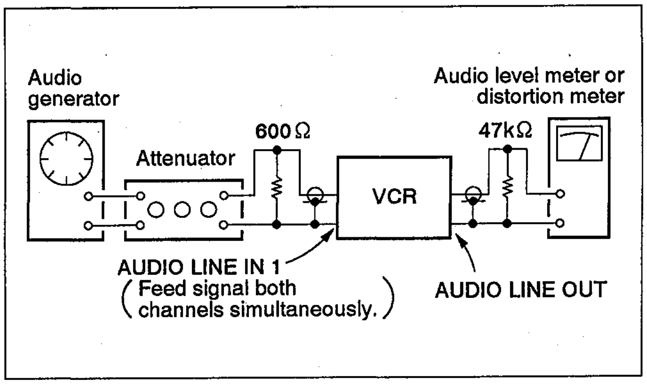

Audio generator
Audio level meter or distortion meter
600Ω
47kΩ
Attenuator
VCR
AUDIO LINE IN 1
(Feed signal both channels simultaneously.)
AUDIO LINE OUT

Fig. 7-2-5.

2-5-1. Hi-Fi Audio System Adjustment

- Set switches and knobs to the following positions to make adjustment unless otherwise specified.
  INPUT SELECT switch ··········· LINE 1
  AUDIO MONITOR ················· STEREO

[Adjusting Sequence]

1. VCO fo adjustment
2. Deviation check
3. BPF fo adjustment
4. AF switching position

1. VCO fo Adjustment (HF-34 Board)

Purpose:

Adjust to have interchangeability in HiFi audio.
When it is out of order, the sound is distorted.

Mode	REC
Signal	No signal
Measuring Instrument	Frequency counter
1.3 MHz Adjustment	
Measurement Point	Pin ⑲ of IC101
Adjusting Element	RV103 (L CH)
Specified Value	1.3 MHz ± 1 kHz
1.7 MHz Adjustment	
Measurement Point	Pin ㉚ of IC101
Adjusting Element	RV102 (R CH)
Specified Value	1.7 MHz ± 1 kHz

Note: Connect the frequency counter through a probe of high input impedance (more than 1 MΩ) and low capacity (10 pF or less).

Adjusting Method:

1) Connect the frequency counter to each measurement point.
2) Adjust each volume so that each frequency meets its specified value.

2. Deviation Check (HF-34 Board)

Purpose:

Set the HiFi audio signal level to specified value.
Adjust to have interchangeability with other tapes and sets.
When it is out of order, the volume of sound is different on playback.

Mode	REC
Signal	Pins ①, ③ 400 Hz − 12 dBs
Measurement Point	IC101 L CH Pin ⑲ R CH Pin ㉚
Measurement Equipment	Frequency counter
Specified Value	50 ± 5 kHz

3. BPF f_o Adjustment (HF-34 Board)

Purpose:

Adjust to separate carrier component precisely and to operate normally the filter for cutting video signal.
When it is out of order, the sound is distorted.

Mode	PB
Signal	1.505 MHz Input 200 mVp-p : Pin ① of CN103
Measurement Point	Pin ⑲ of IC101 Pin ㉚ of IC101
Measuring Instrument	Oscilloscope
Adjusting Element	RV101

Connection:

1) Remove HF-34 board from CN103, and feed 1.505 MHz, 200 mVp-p sine wave to Pin ① of CN103.

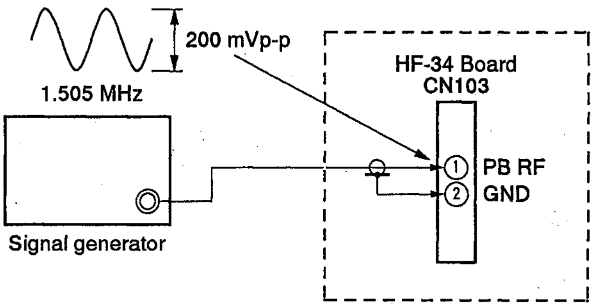


Fig. 7-2-6.

Adjusting method:

1) Turn RV101 counterclockwise seen from the component side.
2) Turn RV101 clockwise gradually and stop turning when the level Ⓐ becomes equal to the level Ⓑ.

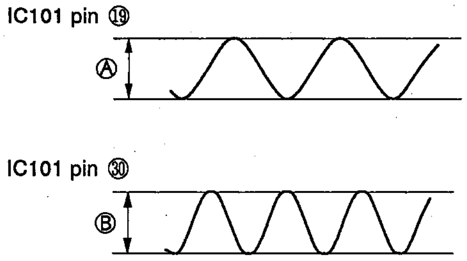


Fig. 7-2-7.

4. AF Switching Position Adjustment (MA-181 Board)

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets.
When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape (HiFi 400 Hz)
Measurement Point	CH1: See Fig. 7-2-8 (HF-34 Board) CH2: Pin ③ of CN802 (RV-33 Board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	Fig. 7-2-9

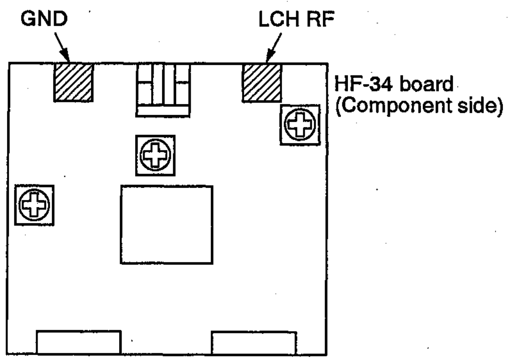

Measure between the big land and the small land near the both sides of CN103 on the component side of HF-34 board.

Fig. 7-2-8.

Adjusting method:

1) Adjust the tracking position to the center by pushing tracking buttons ▲, ▼ (on remote commander). (Auto tracking: OFF)
2) Adjust RV201 to minimize dropout.

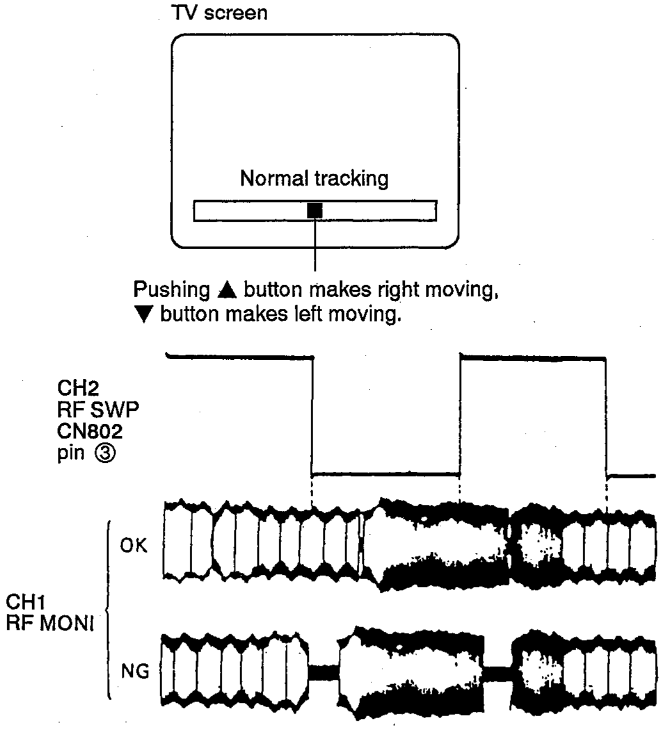

TV screen
Normal tracking
Pushing ▲ button makes right moving,
▼ button makes left moving.
CH2
RF SWP
CN802
pin ③
OK
CH1
RF MONI
NG

Fig. 7-2-9.

2-5-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT II.

2. Recording Bias Adjustment (MA-181 Board) (SLV-920HF)

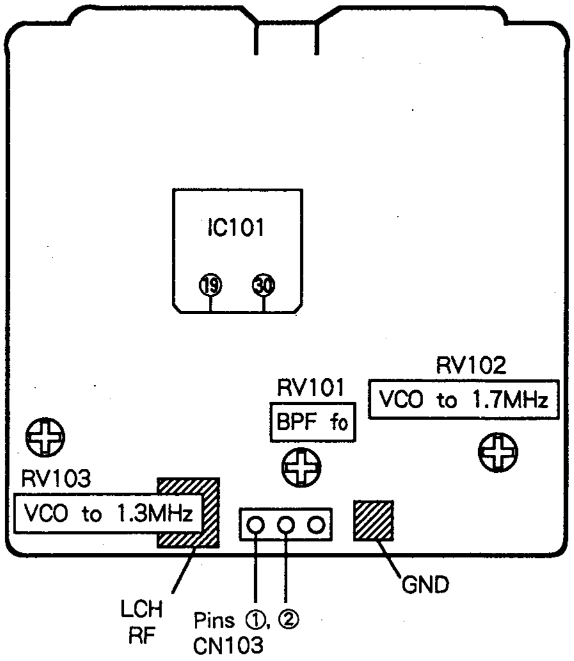
Mode	REC and PB
Signal	400 Hz, − 27.5 dBs 7 kHz, − 27.5 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter
Adjusting Element	RV851
Specified Value	0 ± 1 dB

Adjusting Method:

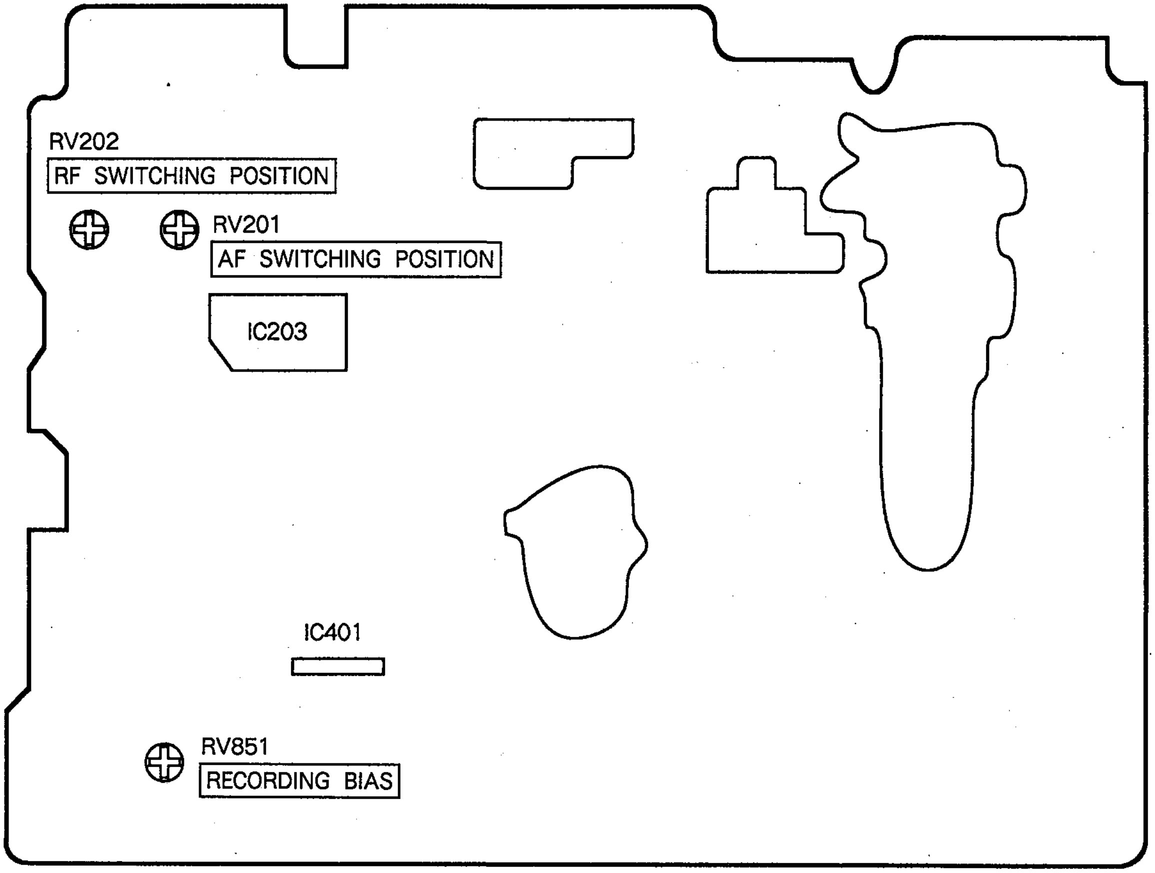
1) Supply a signal of 400 Hz, − 27.5 dBs to Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate − 27.5 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output levels within a range of the 400 Hz playback output level 0 ± 1 dB. When it is out of this range, sdjust RV851 and repeat the steps 1) through 7) above.

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

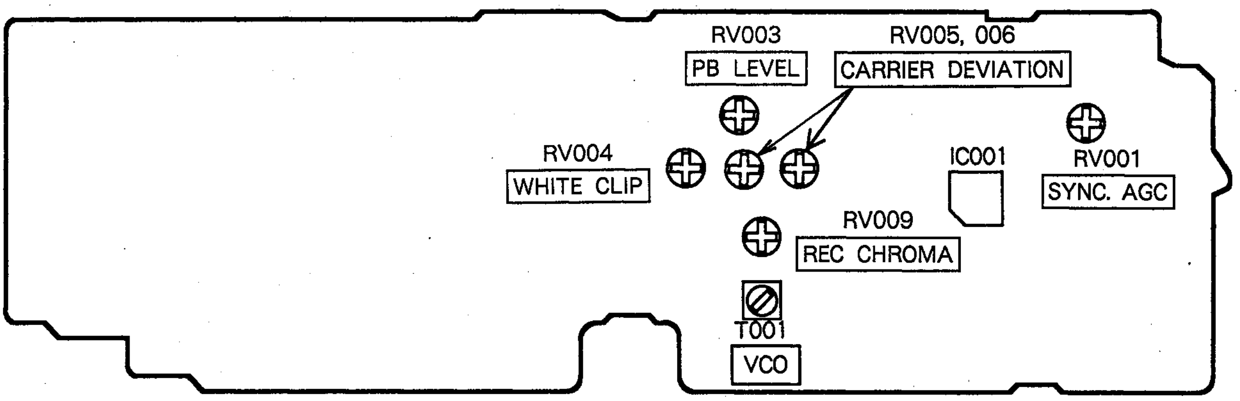
HF-34 BOARD (COMPONENT SIDE)


IC101
⑲
㉚
RV102
VCO to 1.7MHz
RV101
BPF fo
RV103
VCO to 1.3MHz
GND
LCH
RF
Pins ①, ②
CN103

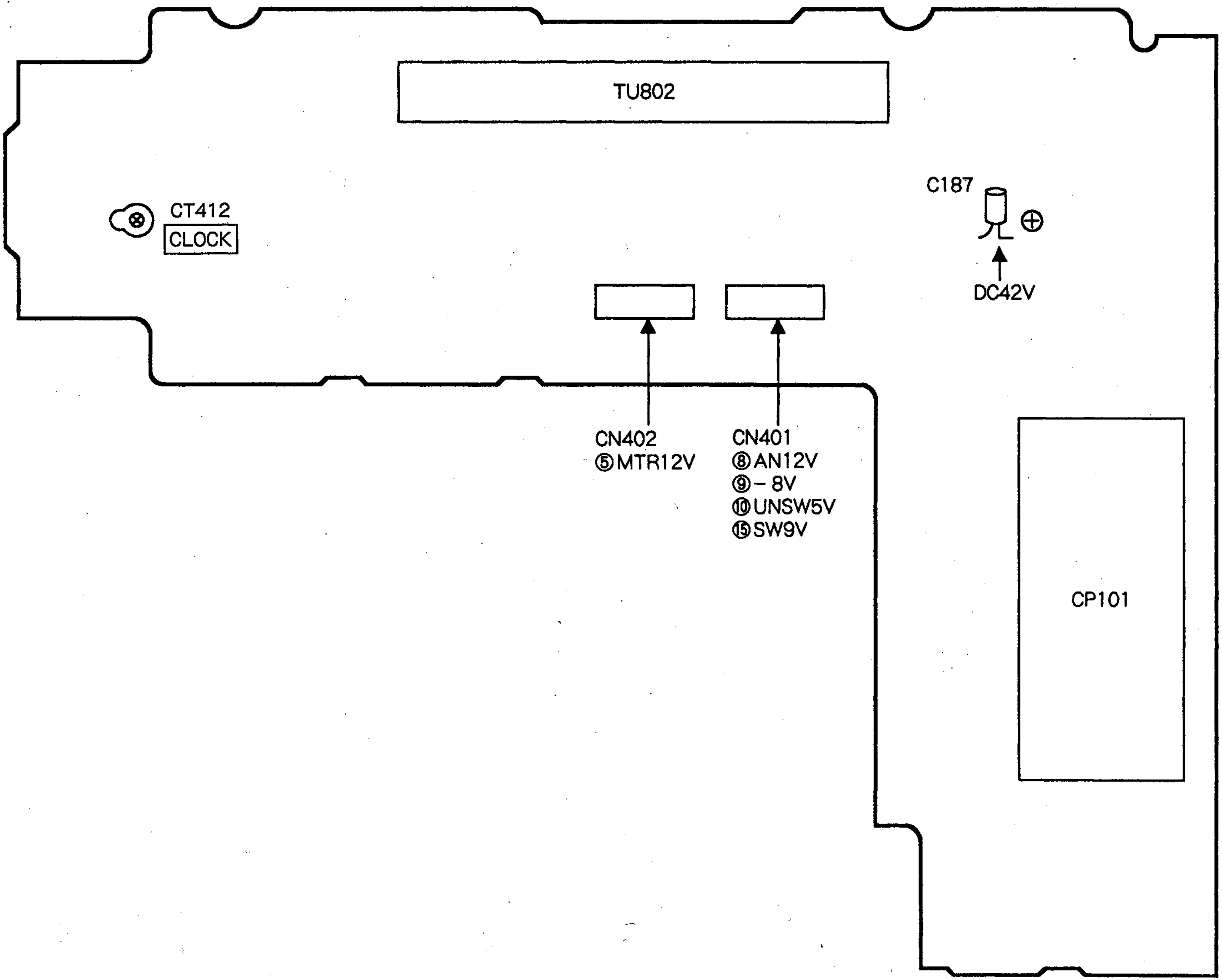
MA-181 BOARD (COMPONENT SIDE)


RV202
RF SWITCHING POSITION
RV201
AF SWITCHING POSITION
IC203
IC401
RV851
RECORDING BIAS

RV-33 BOARD (COMPONENT SIDE)


RV003
PB LEVEL
RV005, 006
CARRIER DEVIATION
RV004
WHITE CLIP
IC001
RV001
SYNC. AGC
RV009
REC CHROMA
T001
VCO

PT-95 BOARD (COMPONENT SIDE)


TU802
CT412
CLOCK
C187
⊕
DC42V
CN402
⑤MTR12V
CN401
⑧AN12V
⑨－8V
⑩UNSW5V
⑮SW9V
CP101

Hookup 5

Incompatible cable box with few scrambled channels, using an A/B switch (continued)

You are now ready to use your VCR

To play a tape

1 Set the TV to channel 3 or 4 (or to video input, if you have made A/V connections).
2 Insert a cassette and press ▷ PLAY.

To record an unscrambled channel

1 Set the A/B switch to "A."
2 Press VCR Plus+ on the remote commander.
3 Enter the program's PlusCode number.
4 Press ONCE, DAILY, or WEEKLY.
5 Insert a cassette.
6 Press POWER to turn the VCR off.

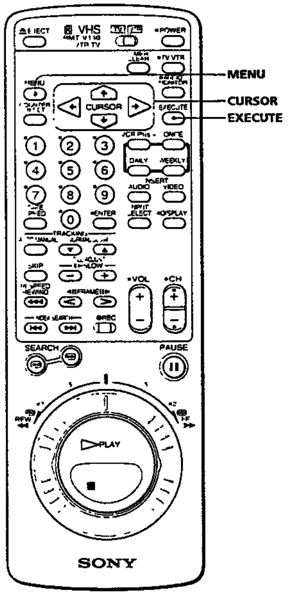
To record a scrambled channel

1 Set the A/B switch to "B."
2 Turn on the cable box.
3 Set the cable box to the channel you want to record.
4 Press VCR Plus+ on the remote commander.
5 Enter the program's PlusCode number.
6 Press ONCE, DAILY, or WEEKLY.
7 Insert a cassette.
8 Press POWER to turn the VCR off.
9 Leave the cable box on.

To watch TV

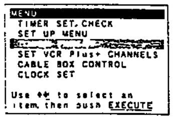
1 Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Set the A/B switch to "B."
3 Turn on your cable box.
4 Set the TV to the cable box output channel (usually 2, 3, or 4).
5 Set the cable box to the channel you want to watch.

Selecting the language *(Canadian model only)*



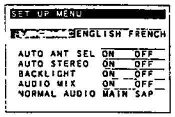
If you prefer French to English, you can change the on-screen language.

1 **Press MENU.**
The main MENU appears on the TV screen.



```
MENU
 TIMER SET,CHECK
 SET UP MENU
[illegible]
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item then push EXECUTE
```

2 **Press CURSOR ↑/↓ to move the cursor (▮) to SET UP MENU, then press EXECUTE.**
The SET UP MENU appears on the TV screen.

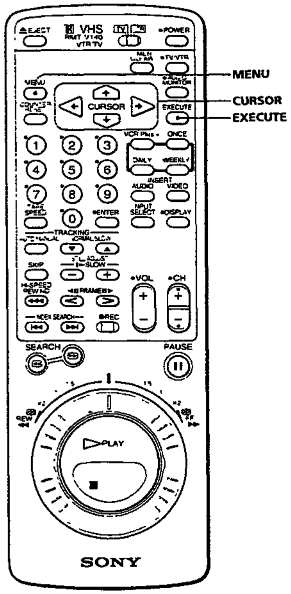


```
SET UP MENU

[illegible] ENGLISH FRENCH

 AUTO ANT SEL  ON   OFF
 AUTO STEREO   ON   OFF
 BACKLIGHT     ON   OFF
 AUDIO MIX     ON   OFF
 NORMAL AUDIO  MAIN SAP
```

3 **Press CURSOR ↑/↓ to move the cursor (▮) to LANGUAGE.**

4 **Press CURSOR ←/→ to select ENGLISH or FRENCH, then press EXECUTE.**

Setting the clock



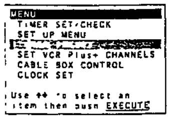
Note
- The menu disappears automatically if you don't proceed for more than one minute.
- The clock cannot be set automatically if you don't receive a channel that carries a time signal in your area. If so, set the clock manually.
- If there are only a few channels in your area that carry time signals, setting the clock automatically may take several minutes. If nothing happens even after you wait several minutes, set the clock manually.

Set the time and date to use the timer feature for recording programs.

Using the Auto Clock Set feature

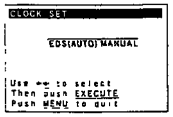
Some TV and cable channels are beginning to transmit time signals with their broadcasts (this is called Extended Data Services – EDS). Your VCR can use this time signal to automatically set the clock. After you complete the steps below, when you turn off the VCR, it will automatically look for a channel that carries a time signal and set the clock. The Auto Clock Set feature only works if a channel in your area is broadcasting a time signal. Use the manual method until broadcasters in your area start sending time signals.

1 **Press MENU.**
The main MENU appears on the TV screen.



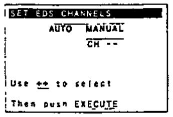
```
MENU
 TIMER SET/CHECK
 SET UP MENU

 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item then push EXECUTE
```

2 **Press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen.



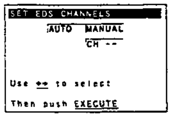
```
CLOCK SET

        EDS(AUTO) MANUAL

Use ←→ to select
Then push EXECUTE
Push MENU to quit
```

3 **Press CURSOR ←/→ to select EDS (AUTO), then press EXECUTE.**
The SET EDS CHANNEL menu appears on the TV screen.



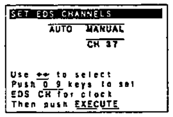
```
SET EDS CHANNELS
        AUTO   MANUAL
               CH --

Use ←→ to select

Then push EXECUTE
```

4 **Press CURSOR ←/→ to select AUTO or MANUAL.**
If you set to AUTO:
The VCR automatically searches for a channel that carries a time signal. (Use this method if you don't know of a channel that carries a time signal.)



```
SET EDS CHANNELS
        AUTO   MANUAL
               CH --

Use ←→ to select

Then push EXECUTE
```

If you set to MANUAL:
Set a channel that carries a time signal by using the number buttons. Use this method if you do know of a channel that carries a time signal.



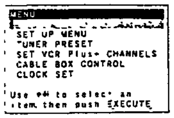
```
SET EDS CHANNELS
        AUTO   MANUAL
               CH 37

Use ←→ to select
Push 0 9 keys to set
EDS CH for clock
Then push EXECUTE
```

5 **Press EXCUTE.**

6 **To activate the Auto Clock Set function, turn the VCR off.**
The VCR automatically adjusts the clock by scanning for a channel that carries a time signal.

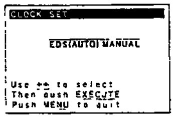
Using the manual method

1 **Press MENU.**
The main MENU appears on the TV screen.



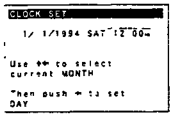
```
MENU

 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item then push EXECUTE
```

2 **Press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen.



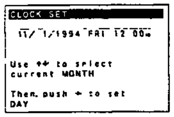
```
CLOCK SET

        EDS(AUTO) MANUAL

Use ←→ to select
Then push EXECUTE
Push MENU to quit
```

3 **Press CURSOR ←/→ to select MANUAL, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen and the month is highlighted.



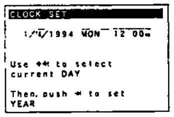
```
CLOCK SET
  1/ 1/1994 SAT 12 00AM

Use ↑↓ to select
current MONTH

Then push → to set
DAY
```

4 **Set the month using CURSOR ↑/↓.**



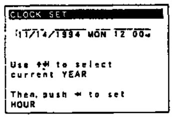
```
CLOCK SET
 11/ 1/1994 FRI 12 00AM

Use ↑↓ to select
current MONTH

Then, push → to set
DAY
```

5 **Press CURSOR → to highlight the day. Set the day using CURSOR ↑/↓.**
The day of the week is set automatically.



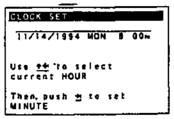
```
CLOCK SET
  1/14/1994 MON 12 00AM

Use ↑↓ to select
current DAY

Then, push → to set
YEAR
```

6 **Press CURSOR → to highlight the year. Set the year using CURSOR ↑/↓.**



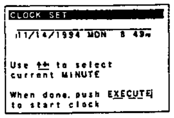
```
CLOCK SET
 11/14/1994 MON 12 00AM

Use ↑↓ to select
current YEAR

Then, push → to set
HOUR
```

7 **Press CURSOR → to highlight the hour. Set the hour using CURSOR ↑/↓.**



```
CLOCK SET
 11/14/1994 MON  8 00PM

Use ↑↓ to select
current HOUR

Then, push → to set
MINUTE
```

8 **Press CURSOR → to highlight the minutes. Set the minutes using CURSOR ↑/↓.**

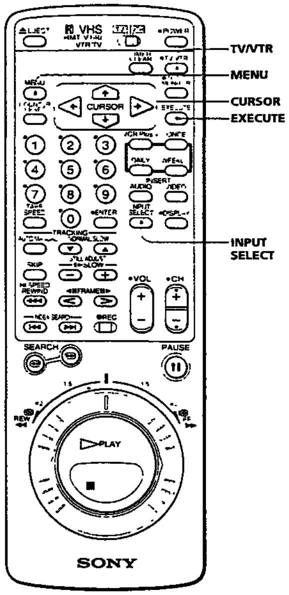


```
CLOCK SET
 11/14/1994 MON  8 49PM

Use ↑↓ to select
current MINUTE

When done, push EXECUTE
to start clock
```

9 **Press EXECUTE to start the clock.**

Presetting channels

(Skip this section if you are using cable box control.)



This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.

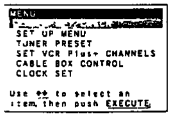
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

1 Press MENU.

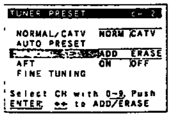
The main MENU appears on the TV screen.



```
MENU
[illegible]
  SET UP MENU
  TUNER PRESET
  SET VCR Plus+ CHANNELS
  CABLE BOX CONTROL
  CLOCK SET

Use ↑↓ to select an
item, then push EXECUTE
```

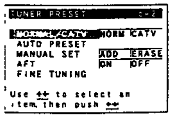
2 Press CURSOR ↑/↓ to move the cursor (▮) to TUNER PRESET, then press EXECUTE.

The TUNER PRESET menu appears on the TV screen.



```
TUNER PRESET           CH 2

  NORMAL/CATV      NORM CATV
  AUTO PRESET
[illegible]        ADD  ERASE
  AFT              ON   OFF
  FINE TUNING

Select CH with 0-9, Push
ENTER, ←→ to ADD/ERASE
```

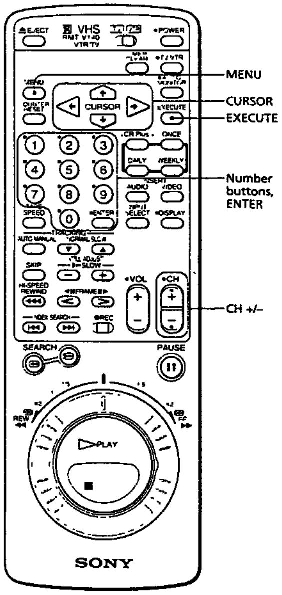
3 Press CURSOR ↑/↓ to move the cursor (▮) to NORMAL/CATV.



```
TUNER PRESET           CH 2

NORMAL/CATV        NORM CATV
  AUTO PRESET
  MANUAL SET       ADD  ERASE
  AFT              ON   OFF
  FINE TUNING

Use ↑↓ to select an
item, then push ←→
```

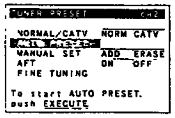
4 Select NORM or CATV using CURSOR ←/→:

- To preset cable TV channels, select CATV.
- To preset VHF and UHF channels, select NORM.



5 Press CURSOR ↑/↓ to move the cursor (▮) to AUTO PRESET, then press EXECUTE.

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.

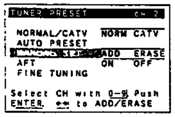


```
TUNER PRESET           CH2

  NORMAL/CATV      NORM CATV
AUTO PRESET
  MANUAL SET       ADD  ERASE
  AFT              ON   OFF
  FINE TUNING

To start AUTO PRESET,
push EXECUTE
```

Presetting/disabling channels manually

1 Display the TUNER PRESET menu.

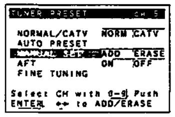
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."



```
TUNER PRESET           CH 2

  NORMAL/CATV      NORM CATV
  AUTO PRESET
[illegible]        ADD  ERASE
  AFT              ON   OFF
  FINE TUNING

Select CH with 0-9, Push
ENTER, ←→ to ADD/ERASE
```

2 Select the channel to preset or disable:

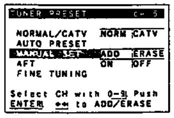
- To preset a channel, enter the channel number by pressing the number buttons then ENTER.
- To disable a channel, select the channel number by pressing CH +/–.



```
TUNER PRESET           CH 5

  NORMAL/CATV      NORM CATV
  AUTO PRESET
[illegible]        ADD  ERASE
  AFT              ON   OFF
  FINE TUNING

Select CH with 0-9, Push
ENTER, ←→ to ADD/ERASE
```

3 Set MANUAL SET to ADD or ERASE, using CURSOR ↑/↓/←/→:

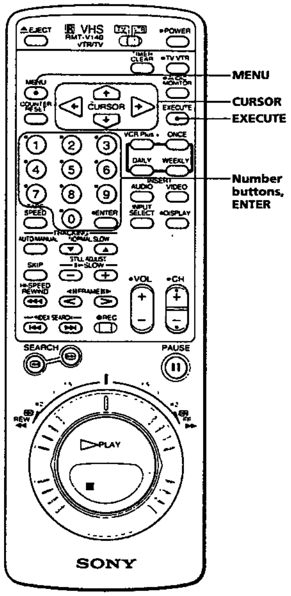
- To preset a channel, select ADD.
- To disable a channel, select ERASE.



```
TUNER PRESET           CH 5

  NORMAL/CATV      NORM CATV
  AUTO PRESET
MANUAL SET         ADD  ERASE
  AFT              ON   OFF
  FINE TUNING

Select CH with 0-9, Push
ENTER, ←→ to ADD/ERASE
```

4 Repeat steps 2 and 3 to preset or disable channels as required, then press EXECUTE.

Presetting channels
(continued)



Cable TV channel assignment

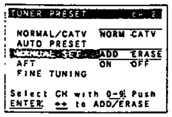
Cable TV systems use letters or numerals to designate channels. This VCR is designed to correspond with standard cable systems. The chart below shows the channel numbers on this VCR and the corresponding cable TV channels. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	Cable TV channel
1	A-8
2	2
3	3
...	...
12	12
13	13
14	A
15	B
16	C
17	D
18	E
19	F
20	G
21	H
22	I
23	J
24	K
25	L
26	M
27	N
28	O
29	P
30	Q
31	R
32	S
33	T
34	U
35	V
36	W
37	W+1
38	W+2
...	...
93	W+57
94	W+58
95	A-5
96	A-4
97	A-3
98	A-2
99	A-1
100	W+59
101	W+60
...	...
124	W+83
125	W+84

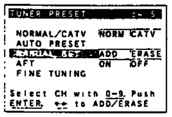
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you may also use the manual tuning function.

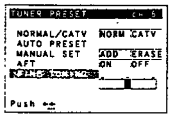
1 **Display the TUNER PRESET menu.**
For instructions, follow steps 1 and 2 in "Presetting all receivable channels automatically."


TUNER PRESET CH 2
NORMAL/CATV NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0-9. Push ENTER. ←→ to ADD/ERASE

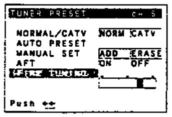
2 **Select the channel you want to fine-tune by pressing the number buttons and then ENTER.**


TUNER PRESET CH 5
NORMAL/CATV NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0-9. Push ENTER. ←→ to ADD/ERASE

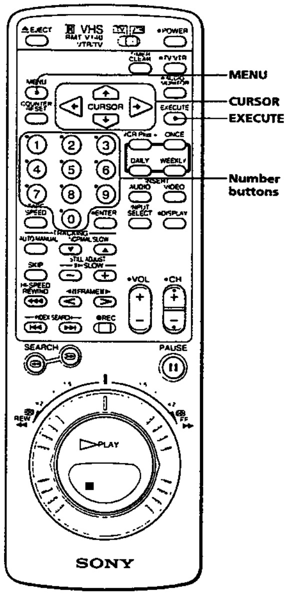
3 **Press CURSOR ↑/↓ to move the cursor (▌) to FINE TUNING.**
The fine tuning meter appears.


TUNER PRESET CH 5
NORMAL/CATV NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Push ←→

4 **Press CURSOR ←/→ to get a clearer picture, then press EXECUTE.**
Note that the AFT setting switches to OFF.


TUNER PRESET CH 5
NORMAL/CATV NORM CATV
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Push ←→

Setting up cable box control

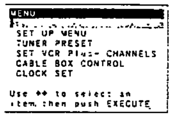


Note
- If you have connected your VCR and the cable box using a LINE connection, the EDS function is cancelled.

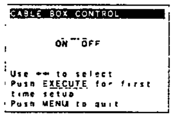
Your VCR includes a cable box control feature which allows the VCR to control most brands of cable boxes via the cable mouse. With cable box control, the VCR controls channels on the cable box for timer recording. You can also use the VCR's remote commander to change channels on the cable box whenever the cable box is turned on. To use cable box control, you need to connect the cable mouse (page **10**) and set the code number and output channel.

This VCR is programmed with codes necessary to control channel selection on most brands of cable boxes at the time this VCR was manufactured. It is possible that new cable boxes may be introduced that cannot be controlled with this VCR's cable mouse. If you have a cable box that is incompatible with this VCR, contact your cable operator — they may be able to provide you with a compatible cable box.

1 **Press MENU.**
The main MENU appears on the TV screen.

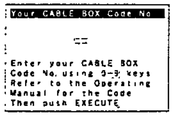

MENU
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
Use ↑↓ to select an item, then push EXECUTE

2 **Press CURSOR ↑/↓ to move the cursor (▌) to CABLE BOX CONTROL, then press EXECUTE.**
The CABLE BOX CONTROL menu appears.

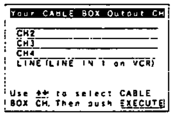

CABLE BOX CONTROL
ON OFF
Use ←→ to select
Push EXECUTE for first time setup
Push MENU to quit

3 **Press CURSOR ←/→ to select ON, then press EXECUTE.**

4 **Enter the cable box code number by pressing the number buttons, then press EXECUTE.**
Find your cable box code number from the chart on page 28.


Your CABLE BOX Code No
--
Enter your CABLE BOX Code No. using 0-9 keys
Refer to the Operating Manual for the Code
Then push EXECUTE

5 **Select the cable box output channel using CURSOR ↑/↓, then press EXECUTE.**


Your CABLE BOX Output CH
CH2
CH3
CH4
LINE (LINE IN 1 on VCR)
Use ↑↓ to select CABLE BOX CH. Then push EXECUTE

Setting up cable box control
(continued)

Compatible cable boxes and their code numbers

Cable box brand	Code number Primary use	Code number Secondary use
Drake		38
Eastern		20
Gemini		28
Hamlin/Regal	14, 15, 43	16
Jerrold/GI	1, 2, 3, 4	10, 11, 30, 31, 32
Macom		26, 37
Magnavox		36
Oak	17, 18	19
Panasonic	12, 13	
Philips	22	21, 23, 24
Pioneer	8, 9	
RCA		25
Regency	20	
Scientific Atlanta	5, 6	
Texscan		27
Tocom	10, 11	
Toshiba		35
Unika		41
United Cable		3
United Satellite		42
Video Tech		39
Videoway		40
Viewstar		22, 23
Zenith	7	33, 34

The VCR contains 43 cable box code numbers (1 to 43). If your cable box is not listed above, you may try one of the other codes.

To check the cable box control setting

1 Press CH +/– on the remote commander. Does the channel indicator on the cable box change? (Point the remote commander at the VCR, not at the cable box.)
2 Press all 10 number buttons (0 to 9) on the remote commander. Does the channel indicator on the cable box change?

If the answer to both 1 and 2 is "yes," you have made the correct setting.

If you cannot get your VCR to control the cable box

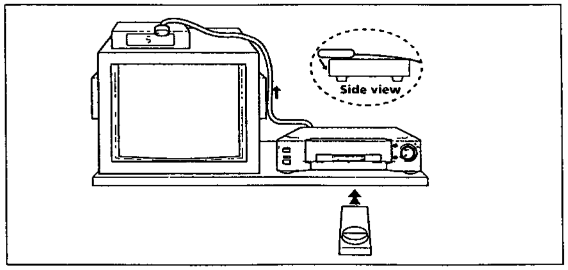
✓ Check the position of the cable mouse.

✓ Place the cable box and VCR away from each other. Do not place the cable box on top of the VCR.

✓ Try the setup again making sure to use the correct control code. If the cable box still does not respond you can try other codes.

If your cable box still does not operate with the cable mouse, contact your cable company to see if they can provide you with a compatible cable box.

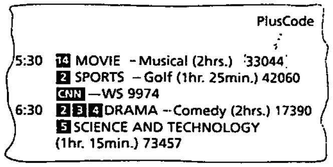
Tips for normal viewing



- Place the cable mouse so that it hangs out over the cable box front.
- Point the remote commander at the VCR, not at the cable box.

Setting up VCR Plus+

Example of "PlusCode"



5:30 14 MOVIE – Musical (2hrs.) 33044
2 SPORTS – Golf (1hr. 25min.) 42060
CNN —WS 9974
6:30 2 3 4 DRAMA – Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY
(1hr. 15min.) 73457

Example of "Channel Line-up Chart"

CABLE TV	Guide channel number
A&E Arts & Entertainment Network	39
AMC American Movie Classics	35
BRV Bravo (program grid only)	54
CNN Cable News Network	42
CSP C-SPAN	28
DIS The Disney Channel	53
DSC The Discovery Channel	37
ESN ESPN	34
FAM The Family Channel	47
HBO Home Box Office	33
LIF Lifetime	46
MAX Cinemax	45
MSG Madison Square Gardens Network	19
MTV Music Television	48
NIK Nickelodeon	38
SC Sports Channel	59
SCA Sports Channel America	70
SHO Showtime	41
TBS TBS SuperStation	43
TMC The Movie Channel	58
TNN The Nashville Network	49
TNT Turner Network Television	52
USA USA Network	44

VCR Plus+ is a feature in Sony VCRs that simplifies the task of programming the VCR to make timer recordings.

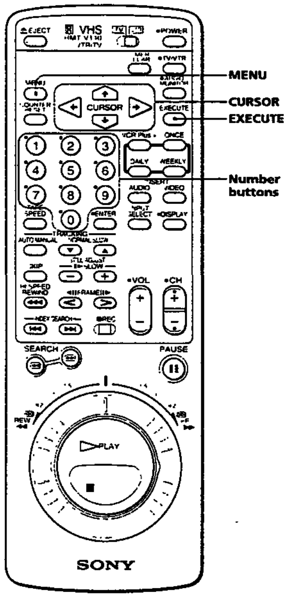
How VCR Plus+ works

Whenever you want to record a TV program, all you need to do is look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV GUIDE* magazine. Then, just enter the PlusCode of the program you want and the VCR is automatically programmed to record that show. It's that simple. With VCR Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the program's PlusCode.

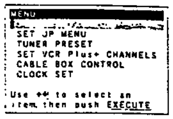
How to set up your VCR

Setting up your VCR involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide). To get the guide channel numbers, find the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the left.

For each channel your VCR receives, use the Channel Line-up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-up Chart on channel 33, and your VCR receives HBO on channel 15, you need to coordinate these numbers using the following procedure. For channels in which the numbers are the same (for example, if your VCR receives HBO on channel 33, and the guide channel number is 33), you can skip this procedure.

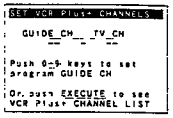


1 **Press MENU.**
The main MENU appears on the TV screen.



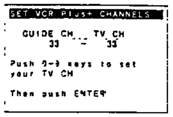
```
MENU
[illegible]
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item, then push EXECUTE
```

2 **Press CURSOR ↑/↓ to move the cursor (▮) to SET VCR Plus+ CHANNELS, then press EXECUTE.**
The SET VCR Plus+ CHANNELS menu appears and the GUIDE CH column is highlighted.



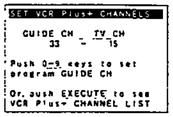
```
SET VCR Plus+ CHANNELS

  GUIDE CH   TV CH
     --   -   --

Push 0-9 keys to set
program GUIDE CH

Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

3 **Enter the channel number assigned in the program guide and press ENTER.**
The TV CH column is highlighted.

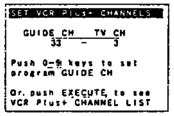


```
SET VCR Plus+ CHANNELS

  GUIDE CH   TV CH
     33   -   33

Push 0-9 keys to set
your TV CH

Then push ENTER
```

4
- **If you made Hookup 1, 2, or 3, enter the actual number on your TV (and VCR) and press ENTER.**
- **If you made Hookup 4, enter the cable box output channel (usually 2, 3, or 4) and press ENTER.**
- **If you have made Hookup 5, enter the actual number on your TV (and VCR) for an unscrambled channel and press ENTER. For a scrambled channel, enter the cable box output channel and press ENTER.**



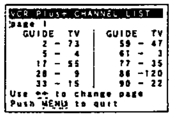
```
SET VCR Plus+ CHANNELS

  GUIDE CH   TV CH
     33   -   15

Push 0-9 keys to set
program GUIDE CH

Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```



```
SET VCR Plus+ CHANNELS

  GUIDE CH   TV CH
     33   -   3

Push 0-9 keys to set
program GUIDE CH

Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

5 **Repeat steps 3 and 4 for each channel whose numbers don't match.**

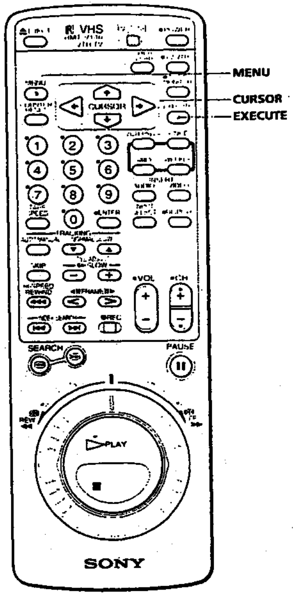
6 **When you have set all channels, press EXECUTE to confirm your channel settings.**



```
VCR Plus+ CHANNEL LIST
page 1
  GUIDE   TV  |  GUIDE   TV
     2 -  73  |    59 -  47
     5 -   4  |    61 -   3
    17 -  55  |    77 -  35
    28 -   9  |    86 - 120
    33 -  15  |    90 -  22
Use ↑↓ to change page
Push MENU to quit
```

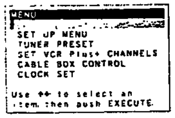
7 **When you've finished, press MENU to exit.**

Using the SET UP menu



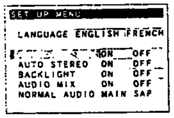
The SET UP menu allows you to make a number of optional setup choices. For a list of menu choices, see the following page.

1 **Press MENU.**
The main MENU appears on the TV screen.



```
MENU
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ↑↓ to select an
item, then push EXECUTE.
```

2 **Press CURSOR ↑/↓ to move the cursor (▮) to SET UP MENU, then press EXECUTE.**
The SET UP MENU appears on the TV screen.



```
SET UP MENU

 LANGUAGE ENGLISH FRENCH

 [illegible]    ON    OFF
 AUTO STEREO    ON    OFF
 BACKLIGHT      ON    OFF
 AUDIO MIX      ON    OFF
 NORMAL AUDIO  MAIN   SAP
```

3 **Press CURSOR ↑/↓ to move the cursor (▮) to the desired menu choice.**

4 **Set the item to the desired setting using CURSOR ←/→.**

5 **Press EXECUTE to return to the original screen.**

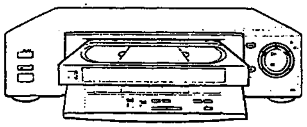
Tip
- See "How sound is recorded on a video tape" on page 35.

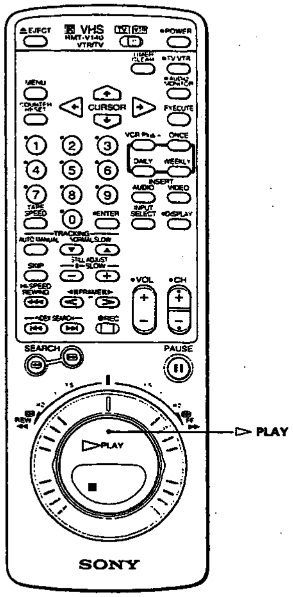
Menu choices
Initial settings are indicated in bold letters.

Menu option	Set this option to
LANGUAGE (*Canadian model only*)	**ENGLISH** or FRENCH to select the language of the on-screen menus.
AUTO ANT SEL	• **ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the channel for video playback (channel 3 or 4). • OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	• **ON** to receive stereo programs. • OFF to reduce noise in a stereo program. Although the sound may improve, the sound becomes monaural. For details, see page 39.
BACKLIGHT	• **ON** to turn on the LCD backlight. • OFF to turn it off.
AUDIO MIX	• ON to listen to the sound recorded on the hi-fi audio track and the normal audio track simultaneously. The AUDIO MONITOR button becomes inoperable. • **OFF** to select the sound using the AUDIO MONITOR button. For details, see page 36.
NORMAL AUDIO	• **MAIN** to record the main sound on both the hi-fi and normal audio tracks. • SAP to record the SAP (Second Audio Program) sound on the normal audio track. The main sound is recorded on the hi-fi audio track. For details, see page 39.

Basic Operations

Playing a tape





Tip
- For further information on searching and playback functions, see "Playing/searching at various speeds" on page 48.

Note
- Tapes recorded in LP mode can be played back on this VCR, while playback in modes other than normal forward speed is not guaranteed.

This section shows you how to play back a video tape.

1 **Turn on your TV and tune in to the VCR:**
- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna, set the TV to the channel for the VCR.

2 **Open the drop down panel and insert a tape.**
The VCR turns on automatically. The tape starts playing automatically if its safety tab has been removed.

3 **Press ▷ PLAY to start playing.**
When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Search forward	Turn the DUAL MODE SHUTTLE (DMS) ring to ⊕ during playback
Search backward	Turn the DMS ring to ⊖ during playback
Fast-forward the tape	Turn the DMS ring to ▶▶ FF during stop
Rewind the tape	Turn the DMS ring to ◀◀ REW during stop
Rewind the tape at high speed	◀◀◀HI-SPEED REWIND
Eject the tape	≜ EJECT

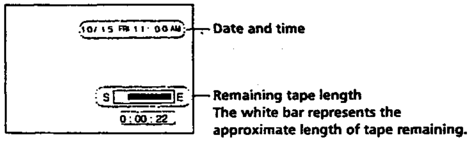
Notes
- When you insert a tape with a short tape length such as T-20, T-30 or a non-standard commercially available tape, the remaining tape length may not be correct.
- The display will not appear during still mode or slow-motion playback.

Notes
- When a tape is reinserted, the counter returns to "0H00M00S."
- The counter will not work on tape portions with no recording.

Notes
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- To play a tape in stereo, you must use the A/V connection.
- If AUDIO MIX in the SET UP MENU is set to ON, the AUDIO MONITOR button doesn't work.

Displaying the time, remaining tape length and time counter

Press DISPLAY to turn the display on or off.


10/15 FRI 11:00 AM
S
E
0:00:22
Date and time
Remaining tape length
The white bar represents the approximate length of tape remaining.

Time counter

Using the time counter

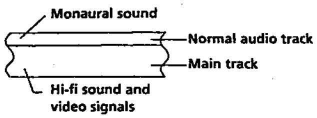
At the point on a tape that you want to find later, press COUNTER RESET to reset the counter to "0H00M00S." When you rewind or advance the tape to this point, refer to the counter.

Playing stereo and bilingual programs

Press AUDIO MONITOR to select the desired sound. Each press of the button changes the display on the VCR and TV screen.

To listen to a		Press AUDIO MONITOR until	
Stereo tape	**Bilingual tape**	**The TV screen shows**	**The display window indicator shows**
Stereo	Left and right channels	"STEREO"	"STEREO"
Left channel	Left channel	"L_{CH}"	"L"
Right channel	Right channel	"R_{CH}"	"R"
Monaural on normal audio track	Sound on normal audio track (SAP)	No indication	No indication

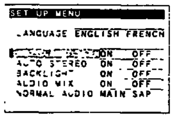
How sound is recorded on a video tape
This VCR records sound onto two different tracks. High-fidelity sound (usually stereo) is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.



Listening to both audio tracks during playback

When playing an audio-inserted tape, you have a choice of listening sound. To listen to the sounds recorded on the hi-fi audio and normal audio tracks at the same time, use the SET UP MENU.

1 Press MENU and select SET UP MENU.

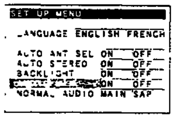


SET UP MENU

LANGUAGE ENGLISH FRENCH

[illegible] ON OFF
AUTO STEREO ON OFF
BACKLIGHT ON OFF
AUDIO MIX ON OFF
NORMAL AUDIO MAIN SAP

2 Set AUDIO MIX to ON using CURSOR ↑/↓/←/→.
The AUDIO MONITOR button becomes inoperative, and the sound you hear is mixed.



SET UP MENU

LANGUAGE ENGLISH FRENCH

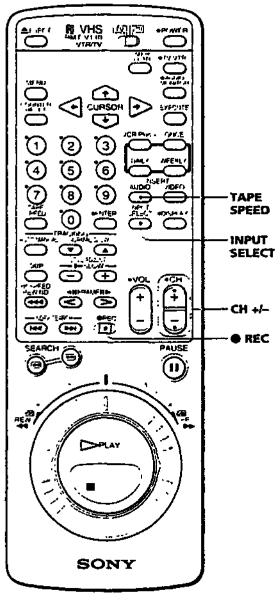
AUTO ANT SEL ON OFF
AUTO STEREO ON OFF
BACKLIGHT ON OFF
[illegible] ON OFF
NORMAL AUDIO MAIN SAP

3 Press EXECUTE to store the setting.
After playing the audio-inserted tape, reset AUDIO MIX to OFF.

Tip
- See "How sound is recorded on a video tape" on page 35.

Note
- If AUDIO MIX remains ON, the AUDIO MONITOR button remains inoperative.

Recording TV programs



This section shows you how to record TV programs in the most basic way: manual recording. With manual recording, you start the VCR recording when the program begins, then stop it when the program ends. The VCR also provides the following ways of recording.
- Manually start recording, then stop it automatically—"Recording using the quick timer" (page 38)
- Automatically start and stop recording—"Recording TV programs using the timer" (page 41)
- Automatically start and stop recording just by entering the "Plus Code"—"Recording TV programs using VCR Plus+" (page 44)

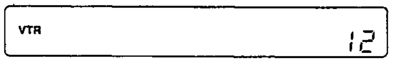
1 Turn on your TV and tune in to the VCR:
- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna, set the TV to the channel for the VCR.

When using a cable box, turn it on.

2 Open the drop down panel and insert a tape with its safety tab in place.

3 Press INPUT SELECT until a channel number appears in the VCR's display window.

4 Select the desired channel by pressing CH +/–.



5 Select the tape speed, SP (standard play) or EP (extended play), by pressing TAPE SPEED.
See "To select tape speeds" on the next page.

6 Start recording by pressing ● REC.
When the tape reaches the end, the VCR automatically rewinds it to the beginning.

Note
- If you insert a tape with its safety tab removed, the VCR starts playing. To record on this tape, cover the tab hole on the cassette, or the VCR will eject it when you press ● REC.

Tip
- To select channels, you can also use the number buttons on the remote commander. Enter the desired channel number using the number buttons, then press ENTER.

Recording TV programs
(continued)

Tips

- To cut out an unwanted scene while recording, press ❚❚ PAUSE, turn the DUAL MODE SHUTTLE ring on the VCR to rewind the tape to the beginning of the unwanted scene, then press ❚❚ PAUSE to resume recording.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

- If your tape ends during quick-timer recording, recording stops and the VCR turns off. The tape does not rewind automatically.
- If a power interruption occurs during quick-timer recording, recording stops and your VCR turns off. If the interruption lasts less than three hours and the power is restored before the recording end time, recording will start again from that point.

To stop recording
Press ■ STOP.

To select tape speeds
When recording, select either SP (standard play) or EP (extended play). EP provides recording time three times as long as SP. However, SP provides better picture quality. You can mix SP and EP on the same tape. When playing back, the VCR automatically detects the tape speed. See the table below for the maximum recording/playback time in each speed.

Tape type	Maximum recording/playback time	
	SP	EP
T-160	2 hrs. 40 min.	8 hrs.
T-120	2 hrs.	6 hrs.
T-60	1 hr.	3 hrs.
T-30	30 min.	1 hr. 30 min.

Recording using the quick timer

The quick timer enables you to record for a specified period of time in intervals of 30 minutes. Once you specify the recording time, the VCR automatically stops recording. Before you begin, check that the clock is set correctly.

After you start recording, press QUICK TIMER until the desired duration appears in the display window. The TIMER indicator on the VCR lights up. Each press increases the recording duration in increments of 30 minutes as shown below.

→ 0:00 → 0:30 → 1:00 ----→ 8:30 → 9:00 ┐

The recording duration decreases minute by minute to 0:00, then the VCR turns off automatically.

To stop recording
To stop while the VCR is recording a program, press ■ STOP to turn off the TIMER indicator on the VCR.

To extend the recording duration while recording
Press QUICK TIMER until the desired duration appears in the display window.

Watching a TV program while recording another

You can watch a TV program and record another at the same time.

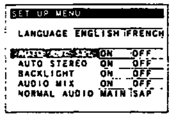
1 Press TV/VTR on the top right of the remote commander to turn off the VTR indicator in the display window.
2 If the TV is connected to the VCR using the audio/video cable, set the TV to TV input.
If the TV is connected to the VCR using only the antenna cable, skip this step.
3 Select the desired channel on the TV.

Recording stereo and SAP programs

Stereo programs
This VCR automatically records stereo programs in stereo. When stereo programs are received, the STEREO indicator appears in the display window. If noise occurs while receiving a stereo program, record the program in monaural. Follow the steps below.

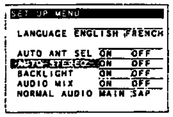
SAP programs
Normally, this VCR records main sound on both main and normal audio tracks. To record SAP (Second Audio Program) sound on normal audio track, follow the steps below.

1 Press MENU and select SET UP MENU.



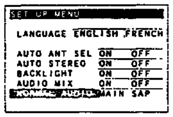
```
SET UP MENU

LANGUAGE      ENGLISH  FRENCH

AUTO ANT SEL  ON       OFF
AUTO STEREO   ON       OFF
BACKLIGHT     ON       OFF
AUDIO MIX     ON       OFF
NORMAL AUDIO  MAIN     SAP
```

2 • To record stereo programs in monaural:
Set AUTO STEREO to OFF using CURSOR ↑/↓/←/→.



```
SET UP MENU

LANGUAGE      ENGLISH  FRENCH

AUTO ANT SEL  ON       OFF
AUTO STEREO   ON       OFF
BACKLIGHT     ON       OFF
AUDIO MIX     ON       OFF
NORMAL AUDIO  MAIN     SAP
```

• To record SAP sound on normal audio track:
Set NORMAL AUDIO to SAP using CURSOR ↑/↓/←/→.



```
SET UP MENU

LANGUAGE      ENGLISH  FRENCH

AUTO ANT SEL  ON       OFF
AUTO STEREO   ON       OFF
BACKLIGHT     ON       OFF
AUDIO MIX     ON       OFF
NORMAL AUDIO  MAIN     SAP
```

3 Press EXECUTE to store the setting.

Tip

- For information on how the VCR records sound, see "How sound is recorded on a video tape" on page 35.

Note

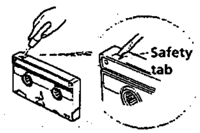
- Set NORMAL AUDIO to MAIN when not recording SAP sound, or no sound is recorded on the normal audio track. If no sound is recorded on the normal audio track and you play the tape on a mono VCR, you will see only video—no audio will be heard.
However, you will receive both audio and video if you play back this tape on a stereo VCR.

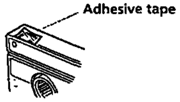
To monitor SAP sound while recording
In the SET UP MENU, set NORMAL AUDIO to SAP. Then press EXECUTE. Press AUDIO MONITOR until the SAP indicator lights up in the display window.

Saving a recording

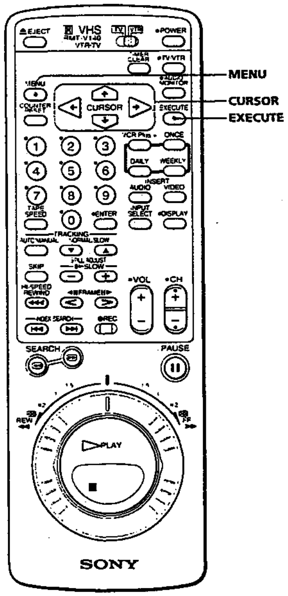
Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, break off the safety tab with a screwdriver or other tool. A tape with its safety tab removed ejects if you try to record on it.

To record on a tape with its safety tab removed, cover the tab hole with adhesive tape.




Adhesive tape

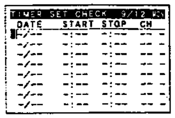
Recording TV programs using the timer


MENU
CURSOR
EXECUTE
SONY

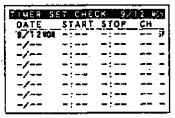
This section shows you how to let the VCR automatically start and stop recording TV programs. You can preset up to eight programs within a one month time frame. If VCR Plus+ is available in your area, see the section "Recording TV programs using VCR Plus+" on page **44** for easier timer recording.

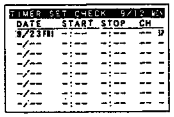
Before you start...
- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR.
  When using a cable box, turn it on.

1 **Press MENU and select TIMER SET/ CHECK, then press EXECUTE.**
A short beep alerts you if the clock needs to be set.

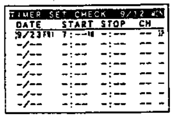

TIMER SET CHECK
DATE START STOP CH

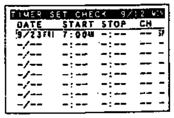
2 **Set the date to start recording:**
1 Press CURSOR ➡.
Make sure today's date is highlighted. If it isn't, reset the clock to the correct time.
2 Press CURSOR ⬆ to set the month and date.
The day of the week is set automatically.
To record the same program every day or the same day once a week, see "Daily/ weekly recording" on page **43**.


TIMER SET CHECK
DATE START STOP CH


TIMER SET CHECK
DATE START STOP CH

3 **Set the time to start recording:**
1 Press CURSOR ➡ to highlight the hour under "START," then press CURSOR ⬆/⬇ to set the hour.
2 Press CURSOR ➡ to highlight the minutes under "START," then press CURSOR ⬆/⬇ to set the minutes.


TIMER SET CHECK
DATE START STOP CH


TIMER SET CHECK
DATE START STOP CH

(continued)

Recording TV programs using the timer (continued)

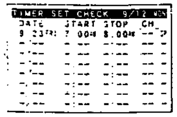
Tips

- To set the channel, you can also use the CH +/– or number buttons.
- To record video sources from LINE IN 1 or 2 jacks, press INPUT SELECT to display "LINE1" or "LINE2" in the "CH" position.
- When CABLE BOX CONTROL is set to ON, timer recording cannot be done through LINE IN.
- To set the recording tape speed, you can also use TAPE SPEED.
- To change or correct a setting before confirming it, press CURSOR ➡ to highlight the item you want to change and reset it.

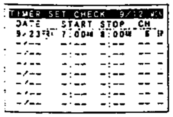
Notes

- If the I► tape indicator in the VCR's display window and the TIMER indicator on the VCR flash when the VCR turns off, check for one of the following causes:
  - no cassette has been inserted,
  - the tape is at its end, or
  - the safety tab on the cassette has been removed.

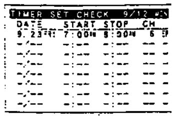
4 **Press CURSOR ➡, then set the time to stop recording in the same way.**



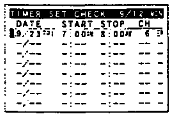
5 **Press CURSOR ➡, then press CURSOR ⬆/⬇ to select the channel you want to record.**
Only the channels preset in the VCR will appear. When using cable box control, the cable box channels appear.



6 **Press CURSOR ➡, then press CURSOR ⬆/⬇ to select the tape speed, SP (standard play) or EP (extended play).**
See "To select tape speeds" on page **38**.



7 **To confirm your program, press CURSOR ➡.**
All the settings stop being highlighted and the cursor (▮) appears in the leftmost column.
To preset another timer setting, move the cursor to the next line using CURSOR ⬇ and repeat steps **2** to **7**.

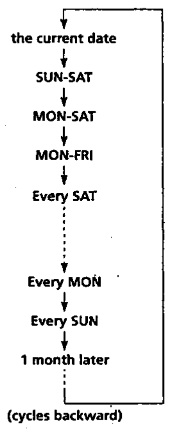


8 **After making the desired timer settings, press EXECUTE.**

9 **Press POWER to turn off the VCR.**
The TIMER indicator on the VCR lights up and stands by for recording. When using a cable box, leave it on.
The VCR automatically turns on and starts recording at the preset start time, and turns off at the preset stop time.

To stop recording
To stop while the VCR is recording a program, press ■ STOP to turn off the TIMER indicator on the VCR.

Daily/weekly recording



To use the VCR while recording
You can do the following tasks during timer recording.

To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page **39**.)

Using the VCR before timer recording begins

Press POWER to turn on the VCR. This turns off the TIMER indicator on the VCR. The VCR is ready for use.

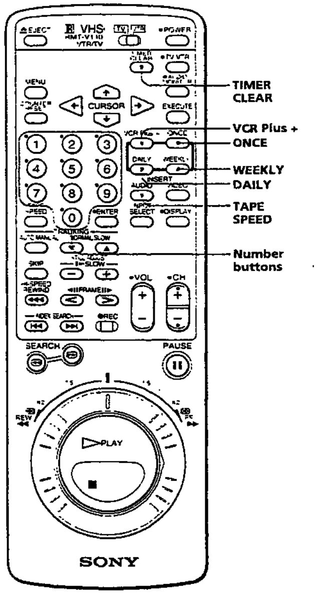
After using the VCR, turn it off. This turns on the TIMER indicator on the VCR. When using a cable box, leave it on. If you do not turn the VCR off before the time you've set it to start recording, the timer setting will be cancelled.

Daily/weekly recording

Daily recording records the same program every day of the week; weekly recording records the same program on the same day, every week.

When you set the date to start recording in step **2** of "Recording TV programs using the timer," press CURSOR ⬇ until the desired day appears. Each time you press the button, the indication changes as shown on the left.

Recording TV programs using VCR Plus+

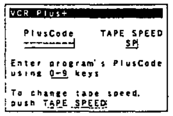


Tip
- If you've entered the wrong PlusCode, press TIMER CLEAR and start again from the beginning.

This section shows you another way of timer recording: recording using VCR Plus+. This allows you to record TV programs more easily. Just enter the program's "PlusCode," and the VCR will automatically record the program. You can preset up to eight programs within a one month time frame.

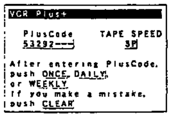
Before you start...
- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 **Press VCR Plus+.**
A short beep alerts you if the clock needs to be set.



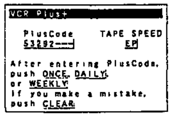
```
VCR Plus+
  PlusCode      TAPE SPEED
  ---------         SP
Enter program's PlusCode
using 0-9 keys
To change tape speed,
push TAPE SPEED
```

2 **Enter the desired program's PlusCode using the number buttons.**
If you make a mistake, press TIMER CLEAR and enter the PlusCode again.



```
VCR Plus+
  PlusCode      TAPE SPEED
  53292---          SP
After entering PlusCode,
push ONCE, DAILY,
or WEEKLY
If you make a mistake,
push CLEAR
```

3 **Select the tape speed, SP (standard play) or EP (extended play), by pressing TAPE SPEED.**

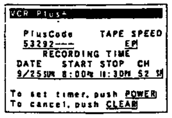


```
VCR Plus+
  PlusCode      TAPE SPEED
  53292---          EP
After entering PlusCode,
push ONCE, DAILY,
or WEEKLY
If you make a mistake,
push CLEAR
```

4 **Press ONCE, DAILY or WEEKLY according to the following:**

To record the program	Press
Only once	ONCE
Monday to Friday at the same scheduled time	DAILY
Every week at the same scheduled time	WEEKLY

The recording information appears on the TV screen: date, program start and stop times, channel number and tape speed. Check that the information is correct. If it is not, press TIMER CLEAR to cancel.
To preset another timer setting, repeat steps 1 to 4.



```
VCR Plus+
  PlusCode      TAPE SPEED
  53292---          EP
     RECORDING TIME
 DATE    START STOP   CH
 9/25SUN 8:00PM 10:30PM 52 SP
To set timer, push POWER
To cancel, push CLEAR
```

Notes
- If the ⧐ tape indicator in the VCR's display window and the TIMER indicator on the VCR flash when the VCR turns off, check for one of the following causes:
  - no tape has been inserted,
  - the tape is at its end, or
  - the safety tab on the cassette has been removed.

Notes
- You cannot set VCR Plus+ in the following cases:
  - When the VCR is turned off.
  - While recording using the timer or quick timer.
- The timer will not accept settings in the following cases:
  - When you select DAILY for a Saturday and Sunday program.
  - When you select DAILY or WEEKLY for a program more than seven days ahead.
  - When you enter the PlusCode of a program that has already ended.

5 **Press POWER to turn the VCR off.**
The TIMER indicator on the VCR lights up and the VCR stands by for recording.
When using a cable box, leave it on.
The VCR automatically turns on, records the program and turns off.

To stop recording
To stop while the VCR is recording a program, press ■ STOP to turn off the TIMER indicator on the VCR.

To use the VCR while recording
You can do the following tasks while recording using VCR Plus+.

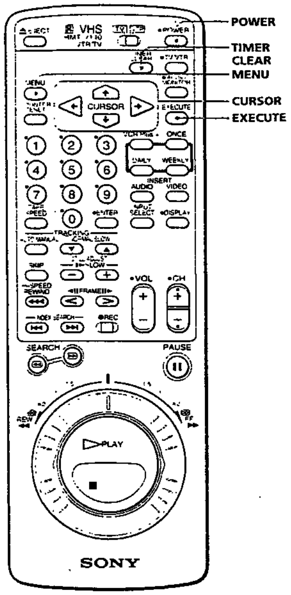
To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page 39.)

Using the VCR before recording begins

Press POWER to turn on the VCR. This turns off the TIMER indicator on the VCR. The VCR is ready for use.

After using the VCR, turn it off. This turns on the TIMER indicator on the VCR. When using a cable box, leave it on. If you do not turn the VCR off before the time you've set it to start recording, the timer setting will be cancelled.

Checking/changing/cancelling timer settings

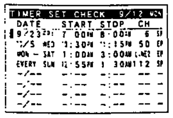

POWER
TIMER
CLEAR
MENU
CURSOR
EXECUTE
SONY

This section shows you how to check, change and cancel the timer settings after you've stored them in the VCR.

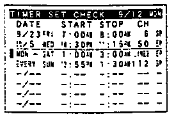
Before you start...
- Turn on your TV and tune in to the VCR.

1 **Press POWER to turn on the VCR.**

2 **Press MENU and select TIMER SET/CHECK, then press EXECUTE.**


TIMER SET CHECK 9/12 MON
DATE START STOP CH

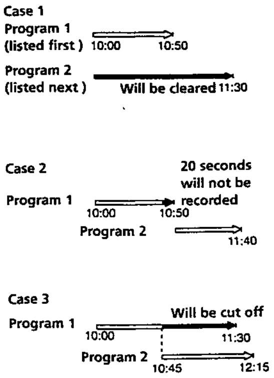
3 **Check the timer settings:**
- If you do not want to change or cancel the settings, press EXECUTE, then turn the VCR off to return to recording standby.
- If you want to change or cancel the settings, press CURSOR ↑/↓ to move the cursor (▮) to the setting you want to change or cancel.


TIMER SET CHECK 9/12 MON
DATE START STOP CH

4 **Change or cancel the timer setting:**
- To change the setting, press CURSOR ←/→ to highlight the item you want to change, and reset it using CURSOR ↑/↓ Then, press CURSOR → to move the cursor to the leftmost column.
- To cancel the setting, press TIMER CLEAR.

5 **Press EXECUTE.**
The VCR returns to the original screen. When there are any other timer settings left in the TIMER SET/CHECK menu, turn the VCR off to return to recording standby.

To check the timer settings during timer recording
Press MENU and select TIMER SET/CHECK. After checking, press EXECUTE to turn off the display.


Case 1
Program 1 (listed first)
10:00
10:50
Program 2 (listed next)
Will be cleared
11:30
Case 2
20 seconds will not be recorded
Program 1
10:00
10:50
Program 2
11:40
Case 3
Will be cut off
Program 1
10:00
11:30
Program 2
10:45
12:15

When the timer settings overlap

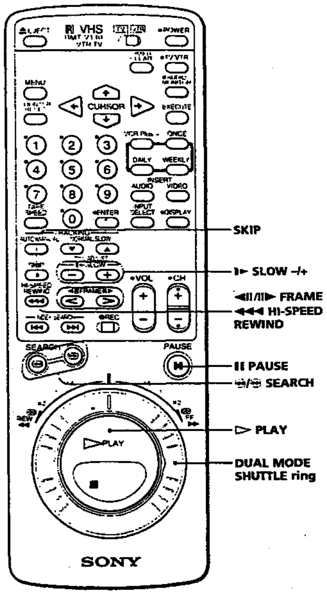
The VCR will not record overlapping programs. If any of your timer settings overlap, change the settings.

Case 1: ***If you preset two programs to start recording at the same time...***
The program listed first in the TIMER SET/CHECK menu has priority over the other programs. The timer settings of lower priority programs will be erased from the TIMER SET/CHECK menu when the first program begins recording.

Case 2: ***If you preset program 2 to start recording at the same time you preset program 1 to finish recording...***
The last 20 seconds of program 1 will not be recorded because the VCR will enter recording pause for program 2 before program 1 is finished.

Case 3: ***If you preset program 2 to start recording before program 1 is finished recording...***
Program 2 will start recording before program 1 has finished.

Playing/searching at various speeds



Tip
- Adjust the picture using the ▼/▲ TRACKING NORMAL/SLOW STILL ADJUST buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear on the top or bottom while pausing.
  - The picture shakes while pausing.

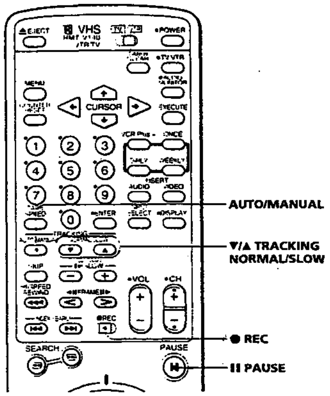
Notes
- Tapes recorded in LP mode can be played back on this VCR, while playback in modes other than normal forward speed is not guaranteed.
- When rewinding at high speed, you will not see the time counter.

You can play back a tape at various speeds: high-speed, slow motion, frame by frame and so on. These options are also useful for searching for a specific point during playback. The sound is muted during these operations.

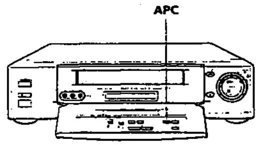
Playback options	Operation	To resume normal playback
Playing at various speeds: One-fifth the normal speed Twice the normal speed High speed	During playback, turn the DUAL MODE SHUTTLE ring right or left to: 1/5 X2 ⊜ or ⊜	Release the ring.
Fast-forwarding/Rewinding	During stop, turn the DUAL MODE SHUTTLE ring to ▶▶ FF or to ◀◀ REW and release.	Press ▷ PLAY.
Viewing the picture during fast-forward or rewind	During fast-forward, turn the DUAL MODE SHUTTLE ring to ▶▶ FF. During rewind, turn the ring to ◀◀ REW.	To return to the previous mode, release the ring.
Locking in a high-speed picture	During playback or pause, press ⊜ SEARCH or ⊜ SEARCH . To change direction, press ◀II FRAME (backward) or II▶ FRAME (forward).	Press ▷ PLAY.
Locking in a slow-motion picture	During playback or pause, press I▶ SLOW –/+. You can increase the playback speed with the + button and decrease the speed with the – button. To change direction, press ◀II FRAME (backward) or II▶ FRAME (forward).	Press ▷ PLAY.
Playing frame by frame	During pause, press II▶ FRAME to advance the picture one frame or ◀II FRAME to reverse the picture one frame.	Press ▷ PLAY.
Skipping a scene	During playback, press SKIP.	The VCR automatically resumes normal playback.
Rewinding at high speed	Press ◀◀◀ HI-SPEED REWIND.	Press ▷ PLAY.
Rewind and restart play	During stop, press ▷ PLAY on the VCR while holding the DUAL MODE SHUTTLE ring on the VCR at the ◀◀ REW position, or while pressing down ◀◀◀ HI-SPEED REWIND on the VCR.	——

(continued)

Adjusting the picture



Note
- The tracking cannot be adjusted automatically for tapes recorded in LP mode.



Notes
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- Press II PAUSE to release recording after the APC indicator stops flashing. If you start recording before the APC indicator stops flashing, the APC function is cancelled.

The VCR automatically adjusts the picture for the best possible playback or recording. If, however, you find the automatic adjustment unsatisfactory, you can adjust the picture manually.

Adjusting the tracking

Though the VCR automatically adjusts the tracking when playing a tape (the AUTO TRACKING indicator flashes in the display window, then lights steadily), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking condition.

Press the ▼/▲ TRACKING NORMAL/SLOW buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press TRACKING AUTO/MANUAL to return to automatic adjustment.

NORMAL TRACKING

Tracking meter

About Adaptive Picture Control (APC)

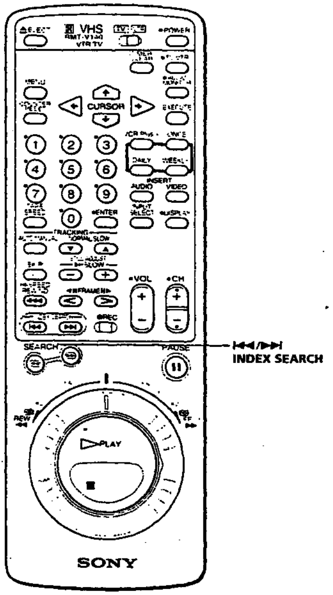
Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you leave APC on (with the APC indicator in the display window lit).

To use APC during playback
The APC function automatically works on all types of tapes, including rental tapes. You can play a tape using the APC function even if the tape was not recorded with it.

To use APC while recording
Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected. There is a short delay before the VCR actually starts recording while the VCR analyzes the tape.

If you want to start recording precisely the first time you record, set the VCR to recording pause mode (the APC indicator flashes slowly) and press ● REC to let the VCR analyze the tape. When the APC indicator stops flashing, press II PAUSE to start recording. Recording begins immediately.

Searching using the index function


SONY
⏮/⏭
INDEX SEARCH

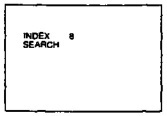
The VCR automatically marks an index signal at the point where recording starts (with the exception of when you start recording from recording pause). Use this as a reference to find the beginning of the recording. Since the index number indicates the relative position from the current position, specify how many index signals ahead or behind the specific index signal is from the current position. The VCR can search up to 99 index signals ahead or behind of the current position.

1 **Insert an indexed tape into the VCR.**

2 **Press the ⏮/⏭ INDEX SEARCH buttons repeatedly until the index number you want appears on the TV screen:**

- To locate succeeding programs, press ⏭ INDEX SEARCH.
- To locate preceding programs, press ⏮ INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.


INDEX SEARCH 8

Editing

Editing with another VCR

Tips

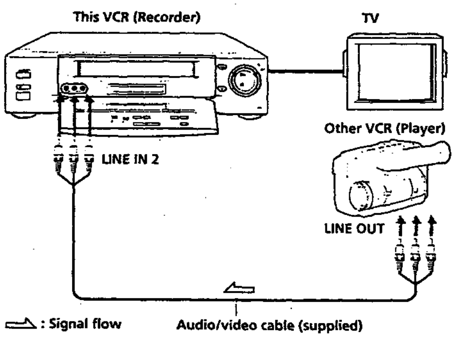
- Make sure you connect the plugs to jacks of the same color.
- To connect the other VCR, you can use the LINE IN 1 jacks as well. In this case, press INPUT SELECT to display L1 in the display window.
- If the other VCR is a monaural type, leave the red plugs unconnected.

Note

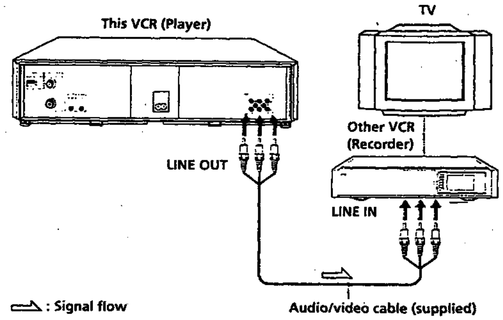
- When connecting the VCRs, do not simultaneously connect the LINE IN and LINE OUT jacks on your VCR. A humming noise may occur if you do this.

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recording or playback.

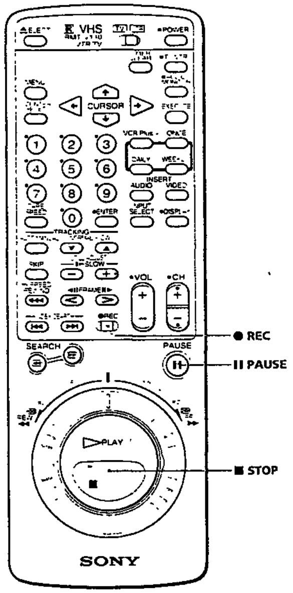
How to hook up to record on this VCR


This VCR (Recorder)
TV
Other VCR (Player)
LINE IN 2
LINE OUT
⇦ : Signal flow
Audio/video cable (supplied)

How to hook up to record to another VCR


This VCR (Player)
TV
Other VCR (Recorder)
LINE OUT
LINE IN
⇦ : Signal flow
Audio/video cable (supplied)

Editing with another VCR
(continued)



Tips
- To make your editing more precise, use the pause buttons on the VCRs.
- To cut out unwanted scenes while editing, press **II** PAUSE on this VCR when an unwanted scene begins. When it ends, press **II** PAUSE again to resume recording (Assemble Editing).

Operation (when recording on this VCR)

Before you start editing
- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED to select the recording tape speed (SP/EP).
- On this VCR, set the EDIT switch to ON. If the other VCR has a similar switch, set it to ON as well.

1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

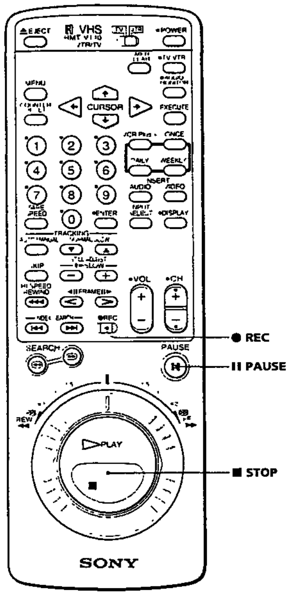
2 Insert a tape into this (recording) VCR. Search for the point to start recording and press II PAUSE.

3 Press ● REC on this VCR and set it to recording pause.

4 To start editing, press the II PAUSE buttons on both VCRs to release the VCRs from pause.
For best results, press the pause button on the other VCR just before pressing **II** PAUSE on this VCR.

To stop editing
Press the ■ STOP buttons on both VCRs.

Insert editing



Note
- You must be in playback pause mode before pressing an INSERT button. (If you are in recording pause mode, you cannot use the insert features.)

You can replace unwanted scenes with other scenes by recording pictures and/or sound over the prerecorded tape. With the video insert function, the original video and hi-fi sound are replaced while the original monaural sound is retained. With the audio insert function, the original monaural sound is replaced. The original video and hi-fi sound, however, are left intact.

Before you start editing
- Follow the instructions on page **51** to hook up your VCRs. To insert sound using a stereo system, see "To hook up with a stereo system" on the next page.
- Press INPUT SELECT to display "L2" in the display window.

1 Insert a source tape into the playback VCR or into the stereo system. Search for the point to start playback and set it to playback pause.

2 Insert the prerecorded tape into this (recording) VCR. Search for the end of the unwanted scene and press II PAUSE.

3 Press COUNTER RESET on this VCR to reset the counter to "0H00M00S."

4 Rewind the tape to the beginning of the unwanted scene.
This VCR pauses.

5 Press the INSERT buttons according to the following:

To insert	Press	So that
Both picture and sound	INSERT AUDIO, then INSERT VIDEO	"AV INS **II**" appears on the TV screen, and "A V INSERT" appears in the display window on the VCR.
Picture only	INSERT VIDEO	"V INS **II**" appears on the TV screen, and "V INSERT" appears in the display window on the VCR.
Sound only	INSERT AUDIO	"A INSERT" appears in the display window on the VCR.

(continued)

6 **To start editing, simultaneously press the II PAUSE buttons on this VCR and on the other VCR or stereo system.**
When the counter of this VCR reaches "0H00M00S," editing stops automatically.

To stop editing
Press the ■ STOP buttons on this VCR and on the other VCR or stereo system.

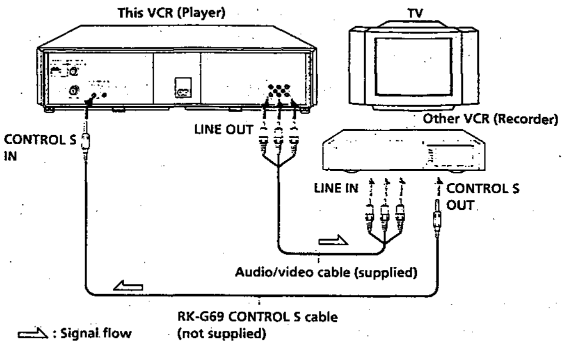
To hook up with a stereo system
Connect LINE·IN 2 AUDIO of this VCR and the audio out jacks of the stereo system, using the RK-C510KS audio cable (not supplied). Display "LINE 2" on the TV screen using INPUT SELECT.

Synchronized editing

If your other VCR has a CONTROL S OUT jack, connect the VCRs via the CONTROL S jacks. This additional connection lets you control both VCRs from one VCR for easier editing.

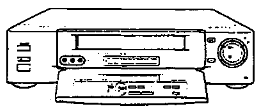
How to hook up via the CONTROL S jacks

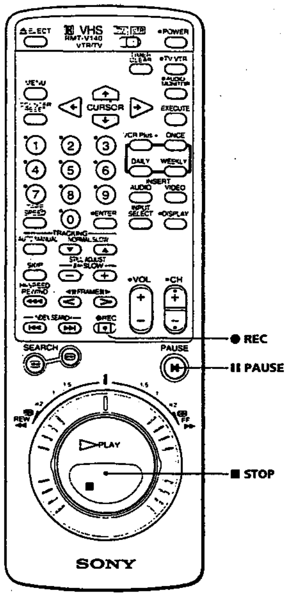
The CONTROL S connection only enables you to pause and release pause.


This VCR (Player)
TV
Other VCR (Recorder)
CONTROL S IN
LINE OUT
LINE IN
CONTROL S OUT
Audio/video cable (supplied)
RK-G69 CONTROL S cable (not supplied)
: Signal flow

Synchronized editing
(continued)

EDIT switch





Operation (when recording on the other VCR)

Before you start editing

- On this VCR, set the EDIT switch to ON. If the other VCR has a similar switch, set it to ON as well.

1 **Insert a source tape with its safety tab removed into this (playback) VCR. Search for the point to start playback and set it to playback pause.**

2 **Insert a tape into the other (recording) VCR. Search for the point to start recording and press II PAUSE.**

3 **Press ● REC on the other VCR to pause for recording.**

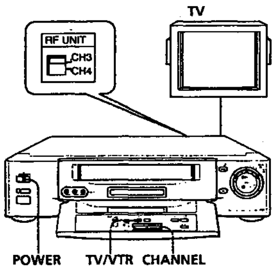
4 **To start editing, press SYNCHRO EDIT on the other VCR.**

5 **At the point you want to stop recording, press SYNCHRO EDIT to stop editing.**
Both VCRs return to pause.

To stop editing
Press the ■ STOP buttons on both VCRs.

Additional Information

General setup information



Setting the RF unit

When connecting the VCR to the TV using only the antenna, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.
If you connect the VCR to the TV using the supplied audio/video cable, you can skip this step.

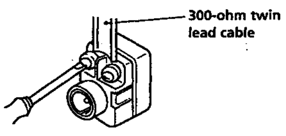
1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

5 Turn on your TV and set it to the channel you selected in step **1** (channel 3 or 4).
The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/–, you have made the correct setting.
Whenever you use the VCR, set the TV to the channel selected in step **1**.



EAC-32 antenna connector (not supplied)

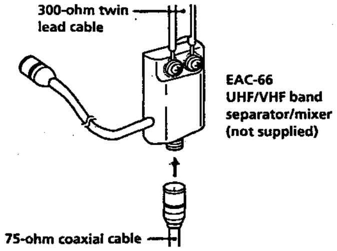
Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the antenna connector.

2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.



Attaching an UHF/VHF band mixer

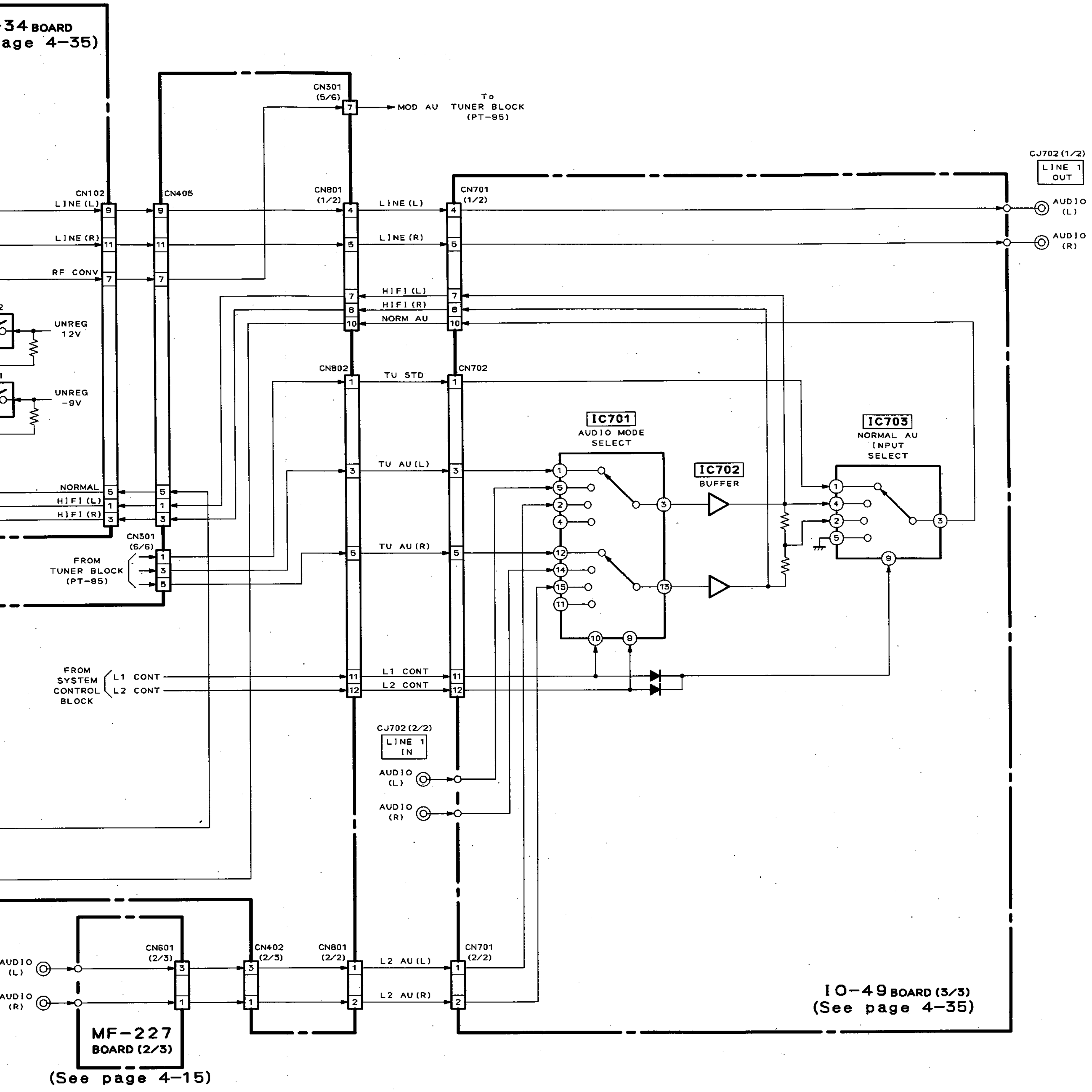
When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the mixer.

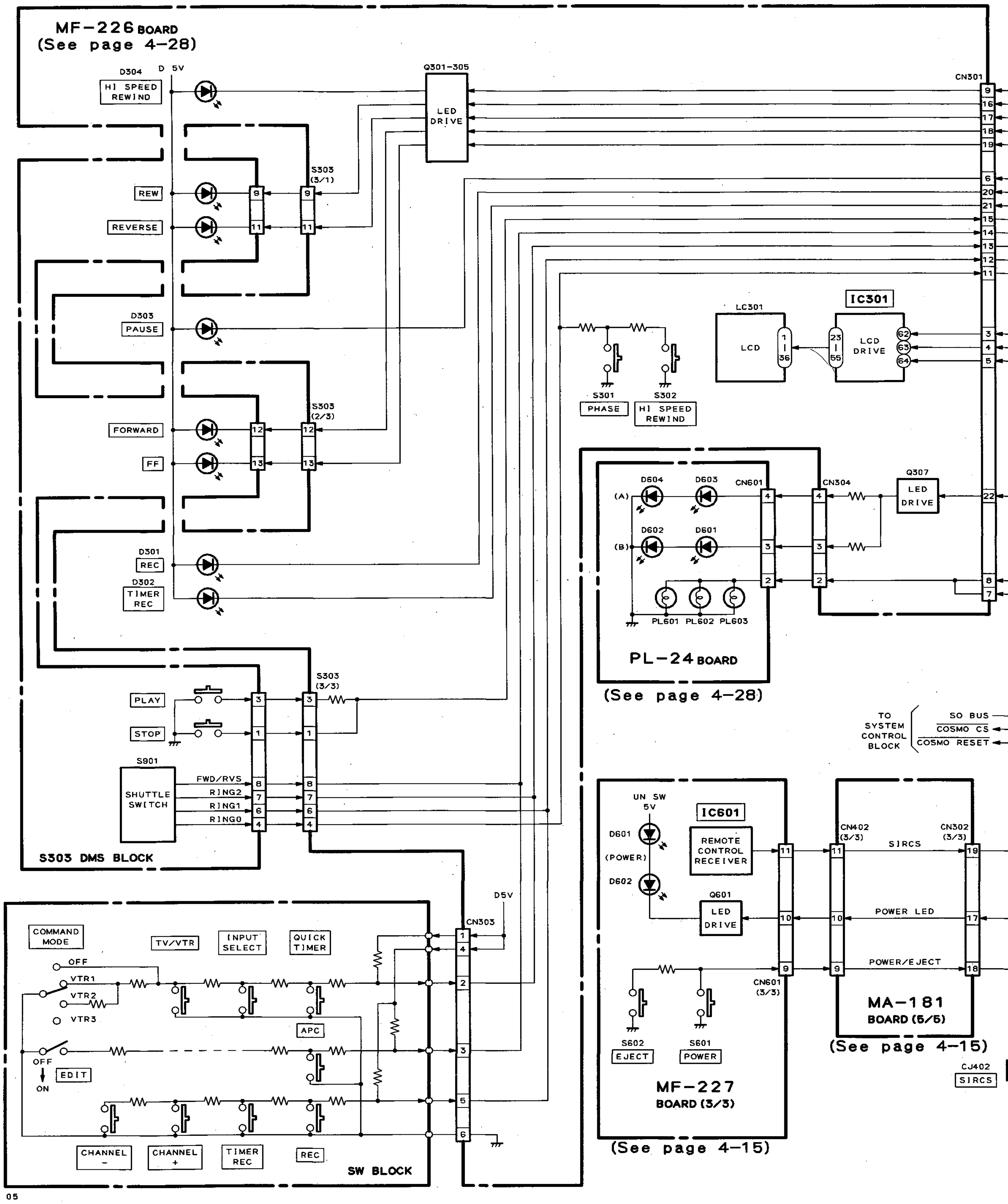
2 Wind the twin leads around the screws on the mixer.

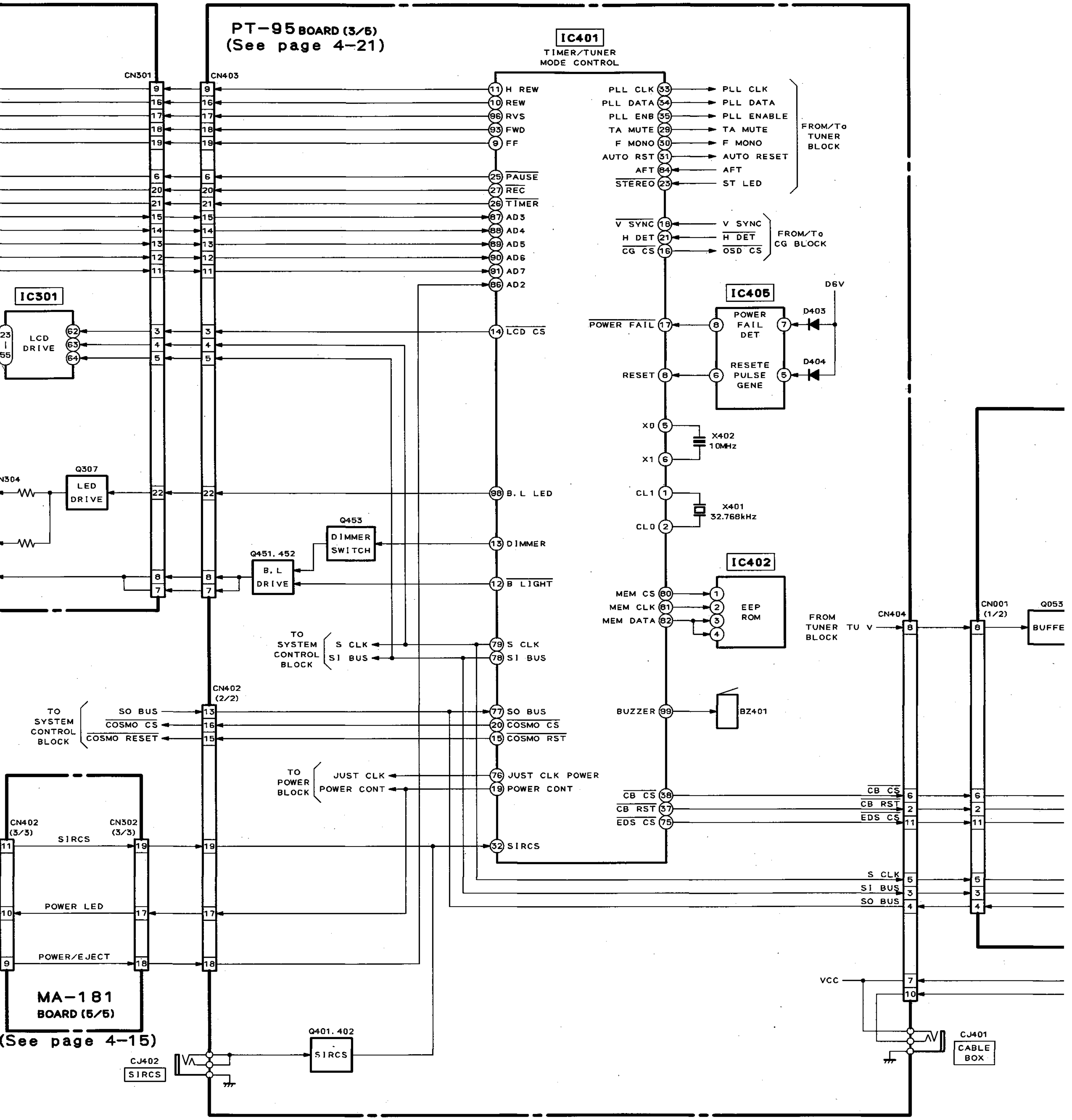
3 Retighten the screws.

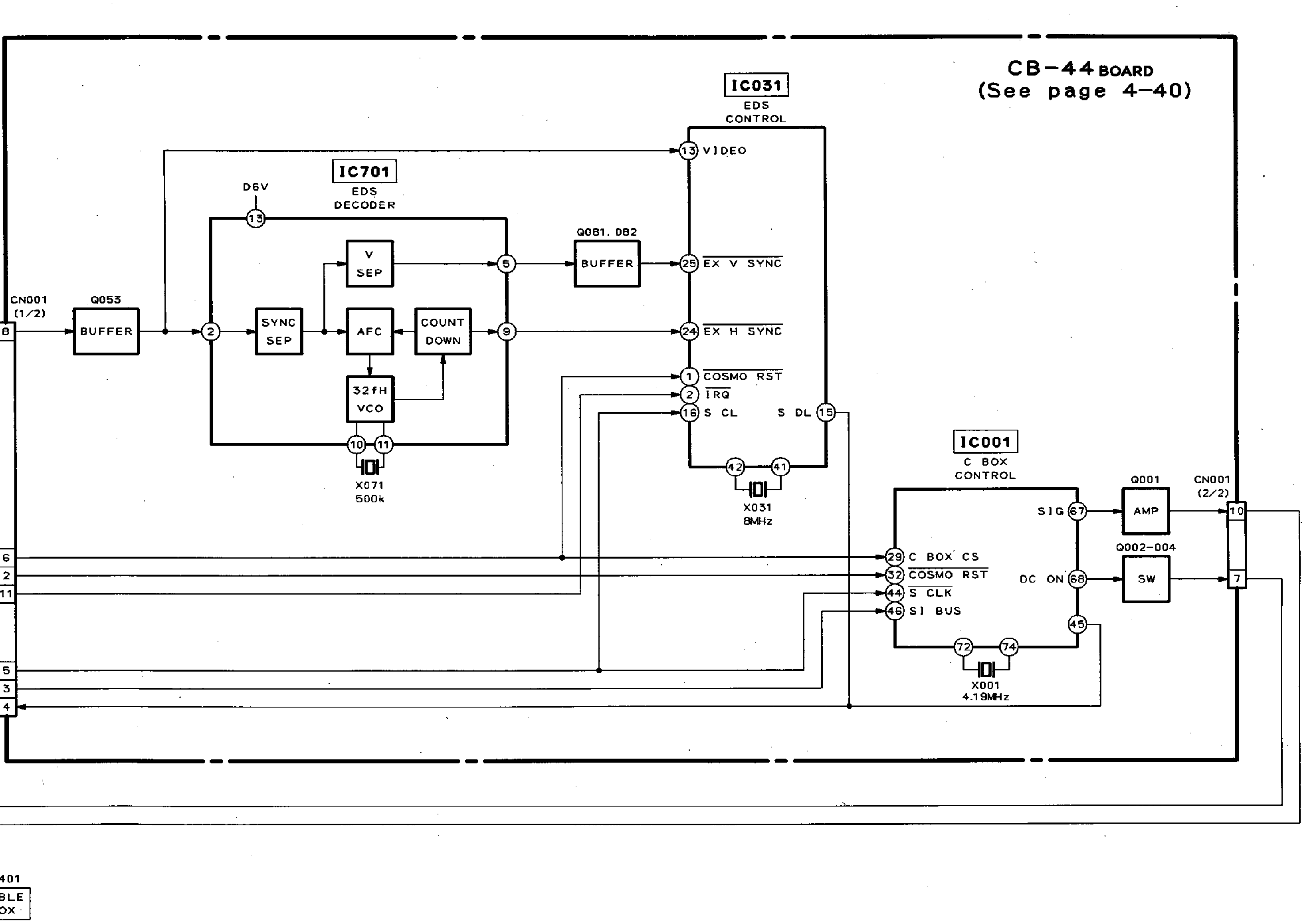
4 Connect the 75-ohm coaxial cable to the mixer.


-34 BOARD
age 4-35)
CN301
(5/6)
7
MOD AU
To
TUNER BLOCK
(PT-95)
CJ702 (1/2)
LINE 1
OUT
AUDIO
(L)
AUDIO
(R)
CN102
CN405
CN801
(1/2)
CN701
(1/2)
LINE (L)
LINE (R)
RF CONV
HIFI (L)
HIFI (R)
NORM AU
UNREG
12V
UNREG
-9V
CN802
CN702
TU STD
IC701
AUDIO MODE
SELECT
IC702
BUFFER
IC703
NORMAL AU
INPUT
SELECT
TU AU (L)
TU AU (R)
NORMAL
HIFI (L)
HIFI (R)
CN301
(6/6)
FROM
TUNER BLOCK
(PT-95)
FROM
SYSTEM
CONTROL
BLOCK
L1 CONT
L2 CONT
CJ702 (2/2)
LINE 1
IN
AUDIO
(L)
AUDIO
(R)
CN601
(2/3)
CN402
(2/3)
CN801
(2/2)
CN701
(2/2)
L2 AU (L)
L2 AU (R)
AUDIO
(L)
AUDIO
(R)
MF-227
BOARD (2/3)
(See page 4-15)
IO-49 BOARD (3/3)
(See page 4-35)

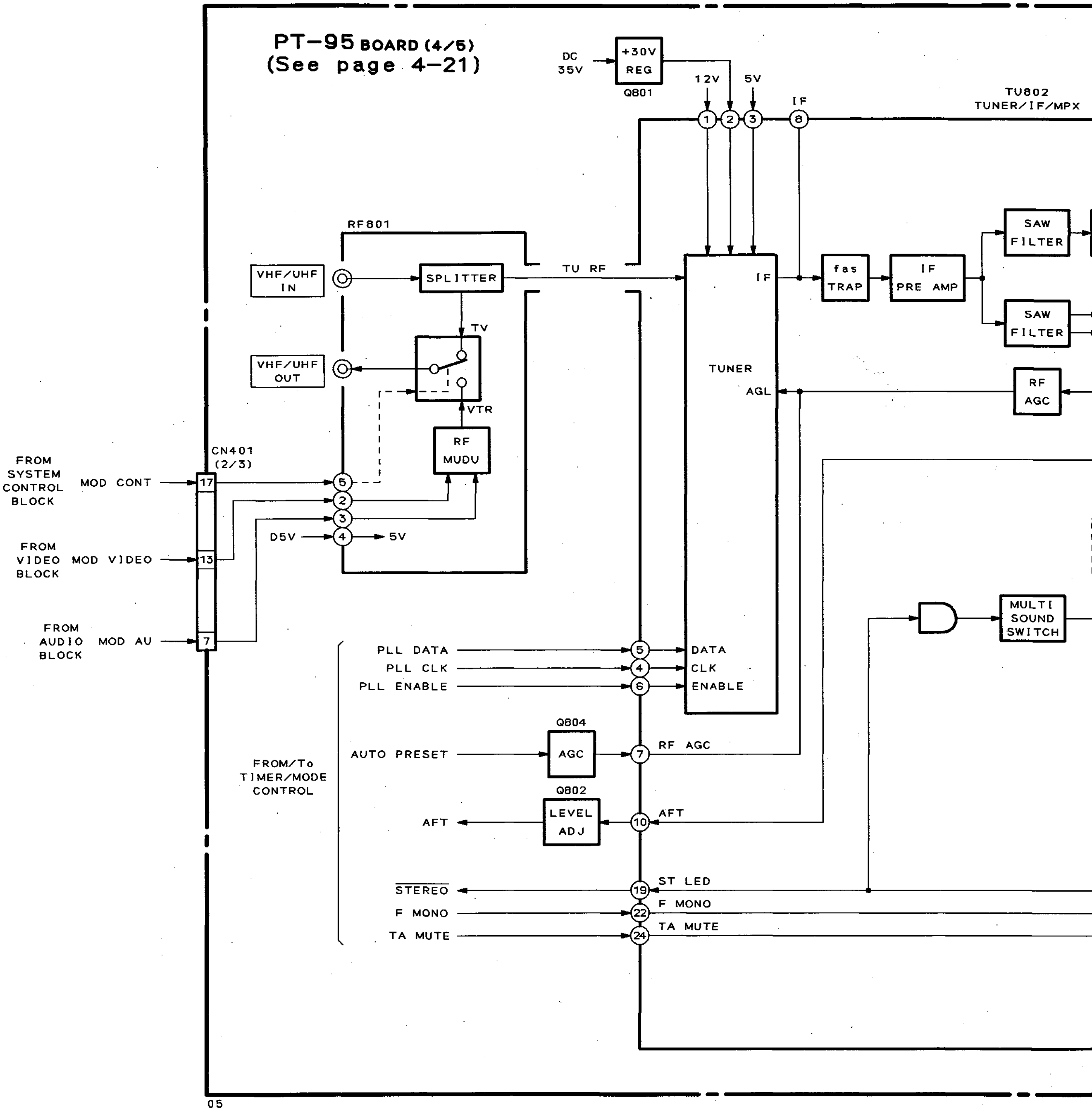
3-5. TIMER, MODE CONTROL BLOCK DIAGRAM


MF-226 BOARD
(See page 4-28)
D304
D 5V
HI SPEED REWIND
Q301-305
LED DRIVE
CN301
9
16
17
18
19
6
20
21
15
14
13
12
11
REW
REVERSE
S303 (3/1)
9
11
D303
PAUSE
LC301
LCD
IC301
LCD DRIVE
1
36
23
55
62
63
64
3
4
5
S301
PHASE
S302
HI SPEED REWIND
FORWARD
FF
S303 (2/3)
12
13
D604
D603
D602
D601
(A)
(B)
CN601
CN304
Q307
LED DRIVE
22
8
7
4
3
2
PL601 PL602 PL603
PL-24 BOARD
(See page 4-28)
D301
REC
D302
TIMER REC
S303 (3/3)
PLAY
STOP
S901
SHUTTLE SWITCH
FWD/RVS
RING2
RING1
RING0
8
7
6
4
S303 DMS BLOCK
TO SYSTEM CONTROL BLOCK
SO BUS
COSMO CS
COSMO RESET
UN SW 5V
IC601
REMOTE CONTROL RECEIVER
D601
(POWER)
D602
Q601
LED DRIVE
S602
EJECT
S601
POWER
CN601 (3/3)
MF-227 BOARD (3/3)
(See page 4-15)
CN402 (3/3)
CN302 (3/3)
SIRCS
POWER LED
POWER/EJECT
11
10
9
19
17
18
MA-181 BOARD (5/5)
(See page 4-15)
CJ402
SIRCS
D5V
CN303
1
4
2
3
5
6
COMMAND MODE
TV/VTR
INPUT SELECT
QUICK TIMER
OFF
VTR1
VTR2
VTR3
APC
OFF
ON
EDIT
CHANNEL -
CHANNEL +
TIMER REC
REC
SW BLOCK
05

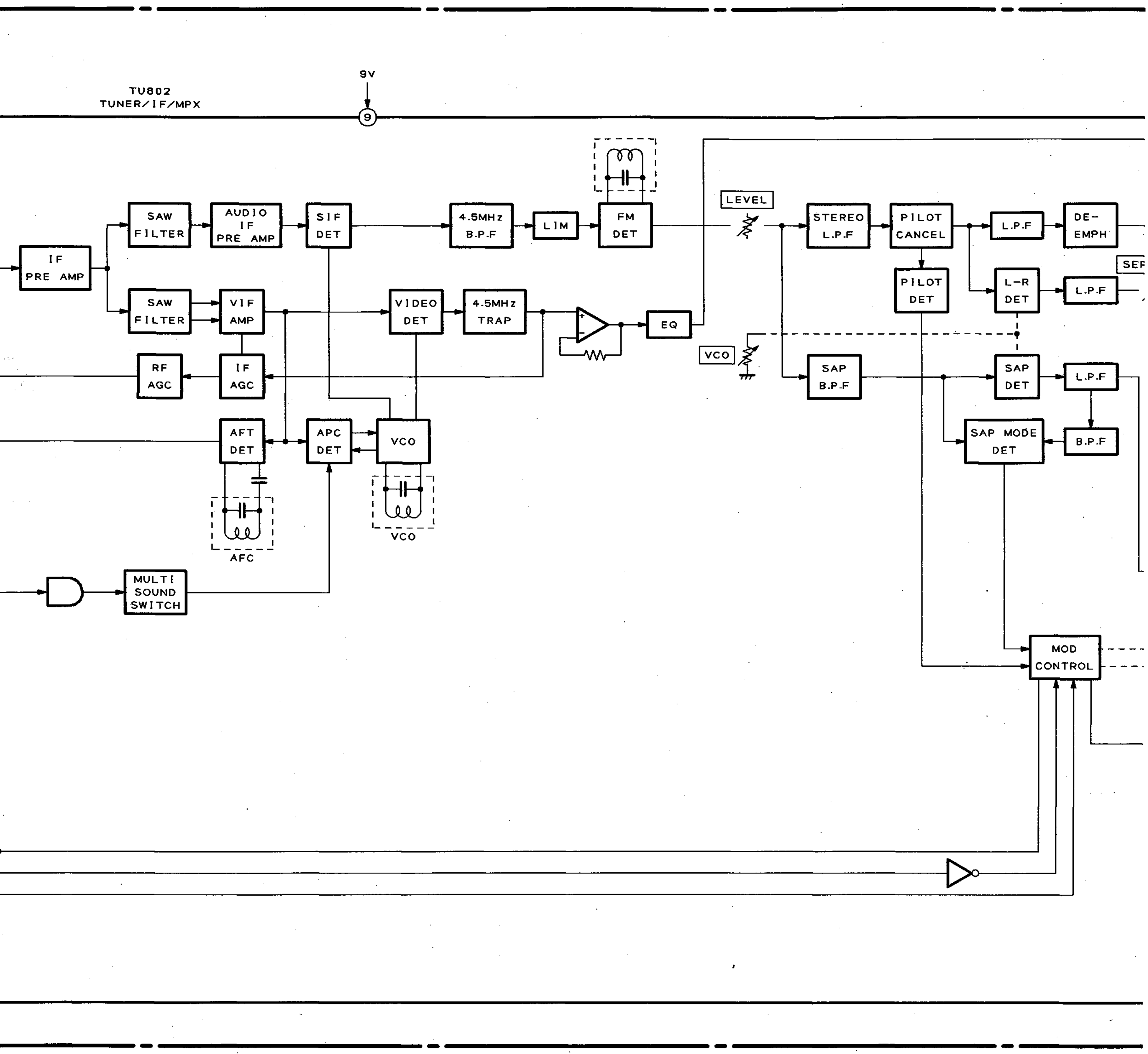

PT-95 BOARD (3/5)
(See page 4-21)
IC401
TIMER/TUNER MODE CONTROL
CN301
CN403
H REW
REW
RVS
FWD
FF
PAUSE
REC
TIMER
AD3
AD4
AD5
AD6
AD7
AD2
LCD CS
B. L LED
DIMMER
B LIGHT
S CLK
SI BUS
SO BUS
COSMO CS
COSMO RST
JUST CLK POWER
POWER CONT
SIRCS
PLL CLK
PLL DATA
PLL ENB
TA MUTE
F MONO
AUTO RST
AFT
STEREO
PLL CLK
PLL DATA
PLL ENABLE
TA MUTE
F MONO
AUTO RESET
AFT
ST LED
FROM/To TUNER BLOCK
V SYNC
H DET
CG CS
V SYNC
H DET
OSD CS
FROM/To CG BLOCK
IC405
POWER FAIL DET
RESETE PULSE GENE
D6V
D403
D404
POWER FAIL
RESET
X0
X1
X402 10MHz
CL1
CL0
X401 32.768kHz
IC402
EEP ROM
MEM CS
MEM CLK
MEM DATA
BUZZER
BZ401
CB CS
CB RST
EDS CS
IC301
LCD DRIVE
23 | 55
Q307
LED DRIVE
N304
Q453
DIMMER SWITCH
Q451, 452
B. L DRIVE
TO SYSTEM CONTROL BLOCK
S CLK
SI BUS
CN402 (2/2)
TO SYSTEM CONTROL BLOCK
SO BUS
COSMO CS
COSMO RESET
TO POWER BLOCK
JUST CLK
POWER CONT
CN402 (3/3)
CN302 (3/3)
SIRCS
POWER LED
POWER/EJECT
MA-181 BOARD (5/5)
(See page 4-15)
CJ402
SIRCS
Q401, 402
SIRCS
FROM TUNER BLOCK
TU V
CN404
CN001 (1/2)
Q053
BUFFE
CB CS
CB RST
EDS CS
S CLK
SI BUS
SO BUS
VCC
CJ401
CABLE BOX

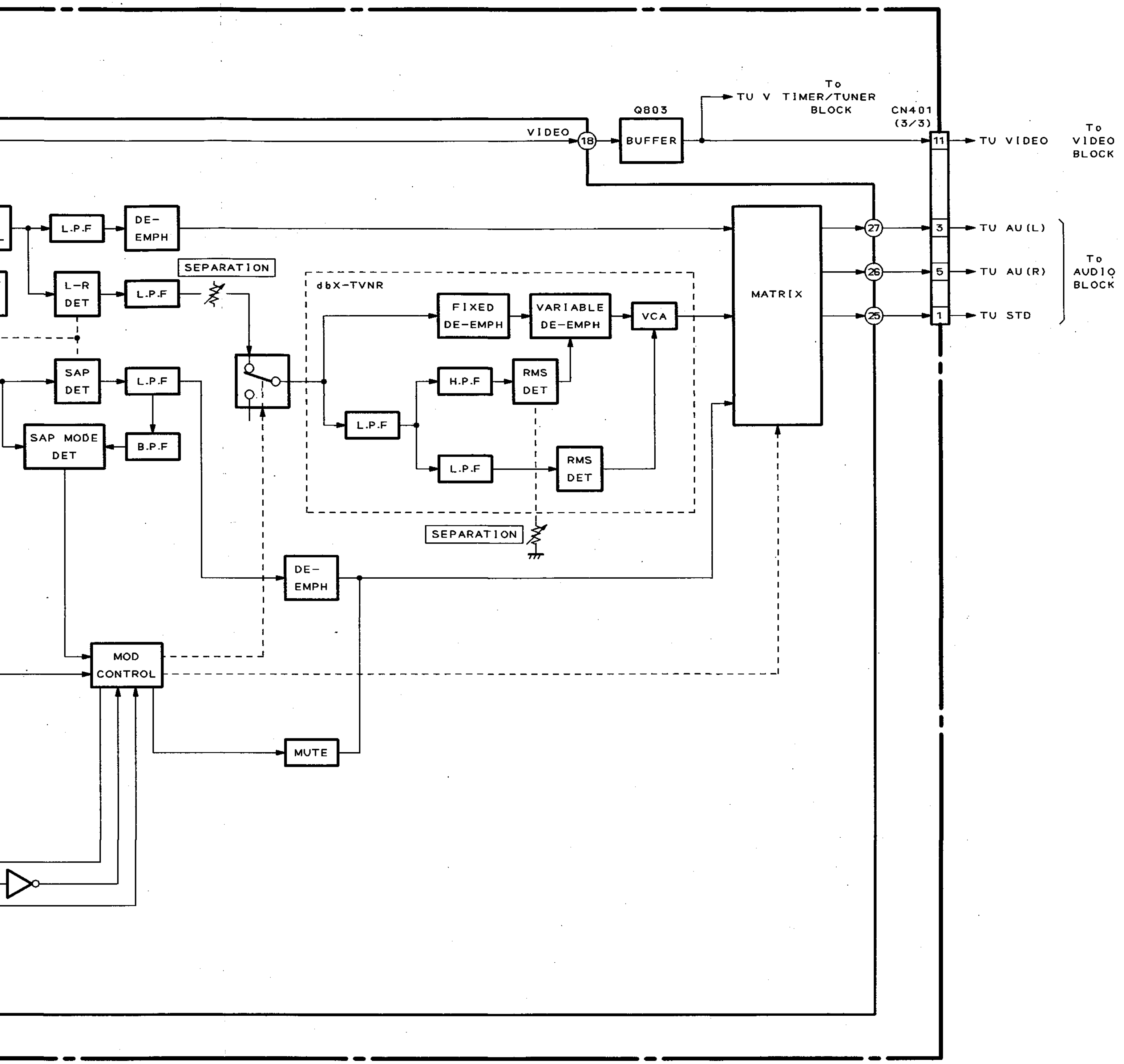

CB-44 BOARD
(See page 4-40)
IC031
EDS
CONTROL
13 VIDEO
25 EX V SYNC
24 EX H SYNC
1 COSMO RST
2 IRQ
16 S CL
S DL 15
42
41
X031
8MHz
IC701
EDS
DECODER
D6V
13
V
SEP
SYNC
SEP
AFC
COUNT
DOWN
32fH
VCO
2
5
9
10
11
X071
500k
Q081, 082
BUFFER
CN001
(1/2)
8
Q053
BUFFER
IC001
C BOX
CONTROL
SIG 67
DC ON 68
29 C BOX CS
32 COSMO RST
44 S CLK
46 SI BUS
45
72
74
X001
4.19MHz
Q001
AMP
Q002-004
SW
CN001
(2/2)
10
7
6
2
11
5
3
4
401
BLE
OX

3-6. TUNER BLOCK DIAGRAM

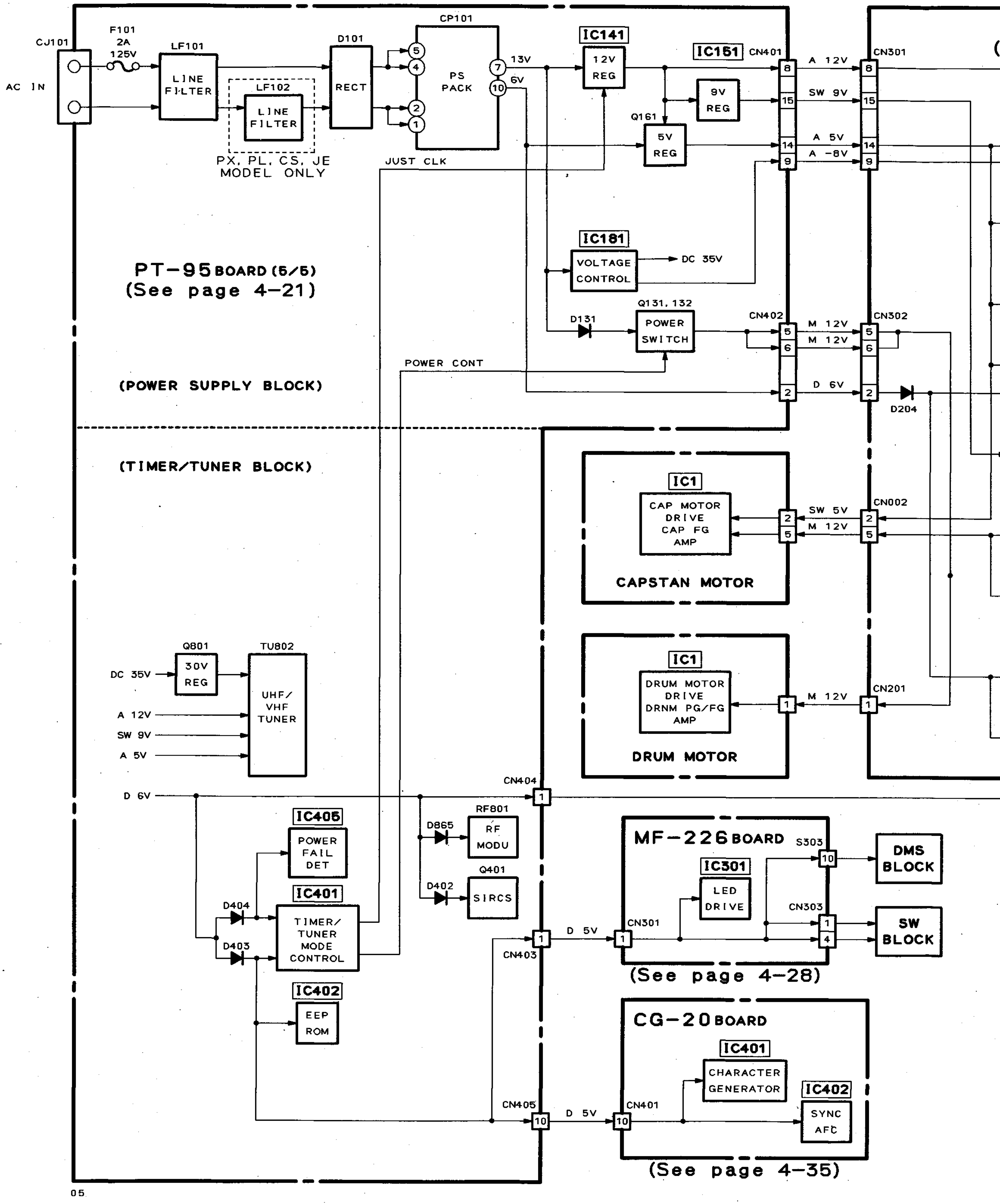


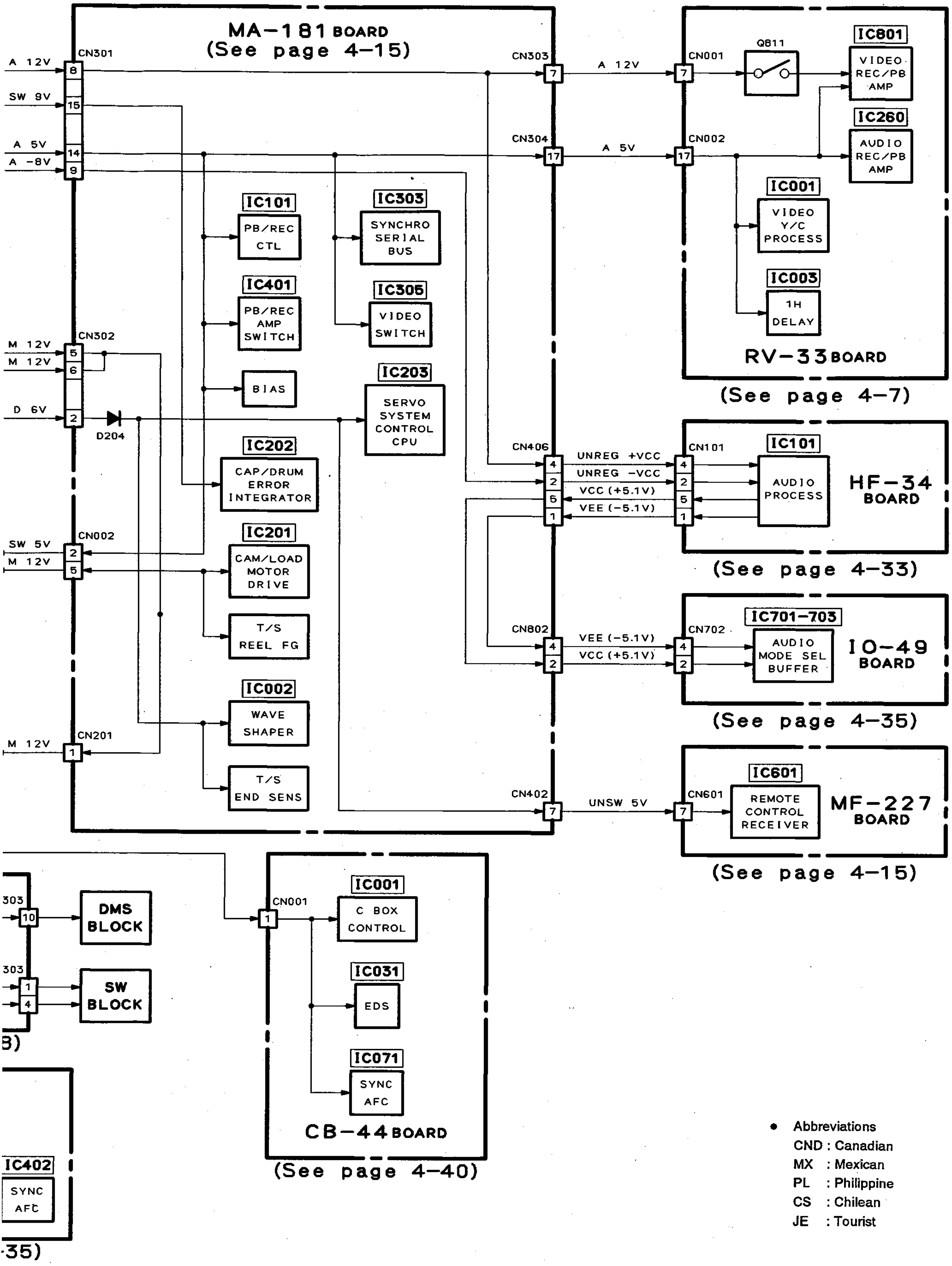
PT-95 BOARD (4/5)
(See page 4-21)
DC 35V
+30V REG
Q801
12V
5V
IF
TU802
TUNER/IF/MPX
1
2
3
8
RF801
VHF/UHF IN
SPLITTER
TU RF
TV
VHF/UHF OUT
VTR
RF MUDU
TUNER
IF
AGL
fas TRAP
IF PRE AMP
SAW FILTER
SAW FILTER
RF AGC
CN401 (2/3)
FROM SYSTEM CONTROL BLOCK
MOD CONT
17
FROM VIDEO BLOCK
MOD VIDEO
13
FROM AUDIO BLOCK
MOD AU
7
5
2
3
4
D5V
5V
MULTI SOUND SWITCH
PLL DATA
PLL CLK
PLL ENABLE
DATA
CLK
ENABLE
Q804
AUTO PRESET
AGC
7
RF AGC
FROM/To TIMER/MODE CONTROL
Q802
AFT
LEVEL ADJ
10
AFT
STEREO
F MONO
TA MUTE
19
22
24
ST LED
F MONO
TA MUTE
05


TU802
TUNER/IF/MPX
9V
9
IF PRE AMP
SAW FILTER
AUDIO IF PRE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
LEVEL
STEREO L.P.F
PILOT CANCEL
L.P.F
DE-EMPH
SAW FILTER
VIF AMP
VIDEO DET
4.5MHz TRAP
EQ
PILOT DET
L-R DET
L.P.F
SEF
VCO
RF AGC
IF AGC
SAP B.P.F
SAP DET
L.P.F
AFT DET
APC DET
VCO
SAP MODE DET
B.P.F
AFC
VCO
MULTI SOUND SWITCH
MOD CONTROL


To
TU V TIMER/TUNER
BLOCK
Q803
BUFFER
CN401
(3/3)
VIDEO
18
11
TU VIDEO
To
VIDEO
BLOCK
L.P.F
DE-
EMPH
27
3
TU AU(L)
26
5
TU AU(R)
25
1
TU STD
To
AUDIO
BLOCK
MATRIX
SEPARATION
L-R
DET
L.P.F
dbX-TVNR
FIXED
DE-EMPH
VARIABLE
DE-EMPH
VCA
H.P.F
RMS
DET
L.P.F
L.P.F
RMS
DET
SAP
DET
L.P.F
SAP MODE
DET
B.P.F
SEPARATION
DE-
EMPH
MOD
CONTROL
MUTE

3-7. POWER SUPPLY BLOCK DIAGRAM


CJ101
AC IN
F101
2A
125V
LF101
LINE FILTER
LF102
LINE FILTER
PX, PL, CS, JE MODEL ONLY
D101
RECT
CP101
PS PACK
13V
6V
JUST CLK
IC141
12V REG
IC151
9V REG
Q161
5V REG
CN401
A 12V
SW 9V
A 5V
A -8V
CN301
IC181
VOLTAGE CONTROL
DC 35V
PT-95 BOARD (5/5)
(See page 4-21)
D131
Q131, 132
POWER SWITCH
CN402
M 12V
M 12V
CN302
D 6V
D204
POWER CONT
(POWER SUPPLY BLOCK)
(TIMER/TUNER BLOCK)
IC1
CAP MOTOR DRIVE CAP FG AMP
CAPSTAN MOTOR
SW 5V
M 12V
CN002
IC1
DRUM MOTOR DRIVE DRNM PG/FG AMP
DRUM MOTOR
M 12V
CN201
Q801
30V REG
TU802
UHF/ VHF TUNER
DC 35V
A 12V
SW 9V
A 5V
D 6V
CN404
RF801
D865
RF MODU
Q401
D402
SIRCS
IC405
POWER FAIL DET
IC401
D404
D403
TIMER/ TUNER MODE CONTROL
IC402
EEP ROM
CN403
D 5V
MF-226 BOARD
S303
IC301
LED DRIVE
CN301
CN303
DMS BLOCK
SW BLOCK
(See page 4-28)
CG-20 BOARD
IC401
CHARACTER GENERATOR
IC402
SYNC AFC
CN405
D 5V
CN401
(See page 4-35)
05


MA-181 BOARD
(See page 4-15)
CN301
A 12V
8
SW 9V
15
A 5V
14
A -8V
9
CN303
7
A 12V
CN304
17
A 5V
IC101
PB/REC CTL
IC303
SYNCHRO SERIAL BUS
IC401
PB/REC AMP SWITCH
IC305
VIDEO SWITCH
CN302
M 12V
5
M 12V
6
D 6V
2
D204
BIAS
IC203
SERVO SYSTEM CONTROL CPU
IC202
CAP/DRUM ERROR INTEGRATOR
CN406
4
2
5
1
UNREG +VCC
UNREG -VCC
VCC (+5.1V)
VEE (-5.1V)
CN002
SW 5V
2
M 12V
5
IC201
CAM/LOAD MOTOR DRIVE
T/S REEL FG
CN802
4
2
VEE (-5.1V)
VCC (+5.1V)
IC002
WAVE SHAPER
CN201
M 12V
1
T/S END SENS
CN402
7
UNSW 5V
CN001
7
Q811
IC801
VIDEO REC/PB AMP
CN002
17
IC260
AUDIO REC/PB AMP
IC001
VIDEO Y/C PROCESS
IC003
1H DELAY
RV-33 BOARD
(See page 4-7)
CN101
4
2
5
1
IC101
AUDIO PROCESS
HF-34 BOARD
(See page 4-33)
CN702
4
2
IC701-703
AUDIO MODE SEL BUFFER
IO-49 BOARD
(See page 4-35)
CN601
7
IC601
REMOTE CONTROL RECEIVER
MF-227 BOARD
(See page 4-15)
303
10
DMS BLOCK
303
1
4
SW BLOCK
3)
CN001
1
IC001
C BOX CONTROL
IC031
EDS
IC071
SYNC AFC
CB-44 BOARD
(See page 4-40)
IC402
SYNC AFC
-35)

- Abbreviations
  CND : Canadian
  MX : Mexican
  PL : Philippine
  CS : Chilean
  JE : Tourist

Ref. No.	Part No.	Description	Remark
		< JACK >	
CJ702	1-565-320-71	JACK, PIN 6P (LINE IN 1/LINE OUT)	
		< CONNECTOR >	
* CN701	1-691-407-11	CONNECTOR, BOARD TO BOARD 10P	
CN702	1-568-672-11	CONNECTOR, BOARD TO BOARD 12P	
* CN703	1-764-212-11	CONNECTOR, BOARD TO BOARD 13P	
		< DIODE >	
D701	8-719-911-19	DIODE 1SS119	
D702	8-719-911-19	DIODE 1SS119	
D706	8-719-109-75	DIODE RD4.3ES-B2	
D707	8-719-109-75	DIODE RD4.3ES-B2	
		< IC >	
IC701	8-759-009-06	IC MC14052BF	
IC702	8-759-924-46	IC BA4560F	
IC703	8-759-009-06	IC MC14052BF	
		< JUMPER RESISTOR >	
JR702	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR752	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L701	1-408-421-00	INDUCTOR 100uH	
L702	1-410-521-11	INDUCTOR 100uH	
L901	1-408-421-00	INDUCTOR 100uH	
L902	1-408-401-00	INDUCTOR 2.2uH	
		< TRANSISTOR >	
Q901	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R701	1-249-433-11	CARBON 22K 5% 1/4W	
R702	1-249-435-11	CARBON 33K 5% 1/4W	
R703	1-249-433-11	CARBON 22K 5% 1/4W	
R704	1-249-435-11	CARBON 33K 5% 1/4W	
R707	1-249-433-11	CARBON 22K 5% 1/4W	
R708	1-249-435-11	CARBON 33K 5% 1/4W	
R715	1-249-413-11	CARBON 470 5% 1/4W	F
R720	1-249-414-11	CARBON 560 5% 1/4W	F
R723	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R728	1-249-435-11	CARBON 33K 5% 1/4W	
R751	1-249-433-11	CARBON 22K 5% 1/4W	
R752	1-249-435-11	CARBON 33K 5% 1/4W	
R753	1-249-433-11	CARBON 22K 5% 1/4W	
R754	1-249-435-11	CARBON 33K 5% 1/4W	
R757	1-249-433-11	CARBON 22K 5% 1/4W	
R758	1-249-435-11	CARBON 33K 5% 1/4W	
R765	1-249-413-11	CARBON 470 5% 1/4W	F
R770	1-249-414-11	CARBON 560 5% 1/4W	F
R778	1-249-435-11	CARBON 33K 5% 1/4W	
R901	1-249-411-11	CARBON 330 5% 1/4W	
R903	1-249-408-11	CARBON 180 5% 1/4W	F
R904	1-247-811-31	CARBON 150 5% 1/4W	
R905	1-249-403-11	CARBON 68 5% 1/4W	F
R916	1-247-804-11	CARBON 75 5% 1/4W	

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Ref. No.	Part No.	Description	Remark
*	A-6782-257-A	MA-181 BOARD, COMPLETE (920HF)	
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*	A-6782-258-A	MA-181 BOARD, COMPLETE (770HF/771HF)	
		***********************	
		(Ref.NO. 2,000 Series)	
		< CAPACITOR >	
C001	1-161-494-00	CERAMIC 0.022uF 25V	
C002	1-161-494-00	CERAMIC 0.022uF 25V	
C003	1-124-261-00	ELECT 10uF 20% 50V	
C004	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C006	1-124-589-11	ELECT 47uF 20% 16V	
C008	1-164-159-11	CERAMIC 0.1uF 50V	
C009	1-164-159-11	CERAMIC 0.1uF 50V	
C022	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C025	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C026	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C101	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C102	1-124-126-00	ELECT 47uF 20% 10V	
C103	1-162-849-11	CERAMIC 0.068uF 10% 16V	
C104	1-126-233-11	ELECT 22uF 20% 50V	
C105	1-124-443-00	ELECT 100uF 20% 10V	
C106	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C107	1-162-835-11	CERAMIC 0.0047uF 10% 16V	
C108	1-164-159-11	CERAMIC 0.1uF 50V	
C109	1-124-925-11	ELECT 2.2uF 20% 100V	
C110	1-124-477-11	ELECT 47uF 20% 25V	
C201	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C202	1-124-589-11	ELECT 47uF 20% 16V	
C203	1-126-101-11	ELECT 100uF 20% 16V	
C204	1-130-489-00	MYLAR 0.033uF 5% 50V	
C205	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C206	1-126-233-11	ELECT 22uF 20% 50V	
C207	1-137-372-11	FILM 0.022uF 5% 50V	
C208	1-124-257-00	ELECT 2.2uF 20% 50V	
C210	1-126-176-11	ELECT 220uF 20% 10V	
C211	1-162-205-31	CERAMIC 18PF 5% 50V	
C212	1-162-205-31	CERAMIC 18PF 5% 50V	

Ref. No.	Part No.	Description	Remark
C213	1-164-159-11	CERAMIC 0.1uF	50V
C214	1-162-294-31	CERAMIC 0.001uF 10%	50V
C215	1-161-057-00	CERAMIC 0.033uF 10%	50V
C216	1-164-159-11	CERAMIC 0.1uF	50V
C299	1-162-282-31	CERAMIC 100PF 10%	50V
C351	1-124-907-11	ELECT 10uF 20%	50V
C352	1-124-907-11	ELECT 10uF 20%	50V
C356	1-124-261-00	ELECT 10uF 20%	50V
C361	1-162-282-31	CERAMIC 100PF 10%	50V
C362	1-162-282-31	CERAMIC 100PF 10%	50V
C366	1-162-282-31	CERAMIC 100PF 10%	50V
C401	1-164-084-11	CERAMIC 820PF 10%	50V
C402	1-164-091-11	CERAMIC 0.0022uF 10% 50V	(920HF)
C402	1-162-832-11	CERAMIC 0.0027uF 10%	16V (770HF/HF771)
C403	1-124-902-00	ELECT 0.47uF 20%	50V
C404	1-124-907-11	ELECT 10uF 20%	50V
C405	1-137-370-11	FILM 0.01uF 5%	50V
C406	1-164-159-11	CERAMIC 0.1uF	50V
C407	1-124-903-11	ELECT 1uF 20%	50V
C409	1-164-159-11	CERAMIC 0.1uF	50V
C410	1-124-907-11	ELECT 10uF 20%	50V
C411	1-124-252-00	ELECT 0.33uF 20%	50V
C414	1-130-494-11	MYLAR 0.082uF 5%	50V
C415	1-124-903-11	ELECT 1uF 20%	50V
C416	1-137-371-11	FILM 0.015uF 5%	50V
C417	1-124-034-51	ELECT 33uF 20%	16V
C418	1-124-034-51	ELECT 33uF 20%	16V
C421	1-162-290-31	CERAMIC 470PF 10%	50V
C852	1-162-306-11	CERAMIC 0.01uF 20%	16V
C853	1-162-306-11	CERAMIC 0.01uF 20% 16V	(920HF)
C854	1-164-087-11	CERAMIC 0.0015uF 10%	50V
C855	1-164-087-11	CERAMIC 0.0015uF 10% 50V	(920HF)
C856	1-104-696-11	FILM 0.015uF 5%	100V (770HF/771HF)
C856	1-137-612-11	FILM 0.0068uF 5% 100V	(920HF)
C857	1-104-697-11	FILM 0.047uF 5% 100V	(920HF)
C858	1-104-695-11	FILM 330PF 5%	100V
C859	1-124-120-11	ELECT 220uF 20%	25V (770HF/771HF)
C859	1-126-101-11	ELECT 100uF 20% 16V	(920HF)
C860	1-126-101-11	ELECT 100uF 20% 16V	(920HF)
		< CONNECTOR >	
CN002	1-569-335-11	CONNECTOR, BOARD TO BOARD 9P	
CN003	1-691-643-11	CONNECTOR, BOARD TO BOARD	
CN005	1-506-468-11	PIN, CONNECTOR 3P	
CN006	1-569-333-11	CONNECTOR, BOARD TO BOARD 3P	
CN101	1-506-468-11	PIN, CONNECTOR 3P	
* CN201	1-573-128-11	PIN, CONNECTOR 5P	
CN301	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN302	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN303	1-573-846-11	CONNECTOR, BOARD TO BOARD 14P	
CN304	1-573-852-11	CONNECTOR, BOARD TO BOARD 20P	
CN402	1-695-821-11	CONNECTOR, BOARD TO BOARD 12P	
* CN405	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P	
* CN406	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P	
* CN801	1-691-409-11	CONNECTOR, BOARD TO BOARD 10P	
* CN802	1-764-210-11	CONNECTOR, BOARD TO BOARD 12P	
* CN803	1-764-211-11	CONNECTOR, BOARD TO BOARD 13P	
CN854	1-506-469-11	PIN, CONNECTOR 4P	
CN855	1-506-468-11	PIN, CONNECTOR 3P	
* CN857	1-560-891-00	PIN, CONNECTOR 3P	
		< DIODE >	
D001	8-719-985-00	DIODE GL451VS1	
D004	8-719-109-93	DIODE RD6.2ES-B2	
D005	8-719-109-93	DIODE RD6.2ES-B2	
D006	8-719-109-93	DIODE RD6.2ES-B2	
D007	8-719-109-93	DIODE RD6.2ES-B2	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-109-74	DIODE RD4.3ES-B1	
D203	8-719-109-81	DIODE RD4.7ES-B2	
D204	8-719-200-82	DIODE 11ES2	
D206	8-719-911-19	DIODE 1SS119	
D353	8-719-911-19	DIODE 1SS119	
D401	8-719-911-19	DIODE 1SS119	
D403	8-719-911-19	DIODE 1SS119	
		< IC >	
IC002	8-759-912-77	IC LMC324N	
IC101	8-759-246-14	IC TA8823N	
⚠IC201	8-759-983-45	IC BA6238A	
IC202	8-759-503-91	IC TL082ACP	
IC203	8-752-848-82	IC CXP80724-083Q	
IC303	8-759-198-39	IC HD49783	
IC305	8-759-927-56	IC BA7021	
IC401	8-759-089-82	IC BA7790LS	
		< COIL >	
L101	1-414-189-31	INDUCTOR 100uH	
L201	1-414-185-41	INDUCTOR 22uH	
L202	1-414-183-41	INDUCTOR 10uH	
L352	1-410-509-11	INDUCTOR 10uH	
L401	1-410-071-11	INDUCTOR 10mH	
L402	1-414-183-41	INDUCTOR 10uH	
L852	1-410-687-11	INDUCTOR 1.2mH	
L853	1-410-687-11	INDUCTOR 1.2mH	(920HF)

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

< PHOTO INTERRUPTER >

Ref. No.	Part No.	Description	Remark
PH001	8-759-144-33	IC PS6002	
PH002	8-759-144-33	IC PS6002	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS201	1-532-685-00	LINK, IC 0.8A	
⚠PS851	1-532-679-00	LINK, IC 0.6A	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-926-31	TRANSISTOR PT483F1S	
Q002	8-729-926-31	TRANSISTOR PT483F1S	
Q201	8-729-422-71	TRANSISTOR UN411L	
Q302	8-729-900-65	TRANSISTOR DTA144ES	
Q303	8-729-900-65	TRANSISTOR DTA144ES	
Q306	8-729-900-65	TRANSISTOR DTA144ES	
Q851	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q852	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q (920HF)	
Q853	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q854	8-729-422-57	TRANSISTOR UN4111	
Q855	8-729-900-65	TRANSISTOR DTA144ES (920HF)	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R001	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R002	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R003	1-249-426-11	CARBON	5.6K	5%	1/4W	
R004	1-249-426-11	CARBON	5.6K	5%	1/4W	
R005	1-249-415-11	CARBON	680	5%	1/4W	F
R006	1-249-441-11	CARBON	100K	5%	1/4W	
R007	1-249-441-11	CARBON	100K	5%	1/4W	
R008	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R009	1-249-408-11	CARBON	180	5%	1/4W	F
R010	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R011	1-249-437-11	CARBON	47K	5%	1/4W	
R012	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R015	1-249-437-11	CARBON	47K	5%	1/4W	
R016	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R017	1-249-429-11	CARBON	10K	5%	1/4W	
R018	1-249-429-11	CARBON	10K	5%	1/4W	
R019	1-249-429-11	CARBON	10K	5%	1/4W	
R020	1-249-429-11	CARBON	10K	5%	1/4W	
R023	1-249-414-11	CARBON	560	5%	1/4W	F
R024	1-249-437-11	CARBON	47K	5%	1/4W	
R025	1-249-437-11	CARBON	47K	5%	1/4W	
R101	1-247-901-11	CARBON	820K	5%	1/4W	
R102	1-249-439-11	CARBON	68K	5%	1/4W	
R103	1-249-441-11	CARBON	100K	5%	1/4W	
R104	1-249-441-11	CARBON	100K	5%	1/4W	
R105	1-249-435-11	CARBON	33K	5%	1/4W	
R106	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R107	1-249-411-11	CARBON	330	5%	1/4W	
R108	1-247-807-31	CARBON	100	5%	1/4W	
R109	1-215-429-00	METAL	2.2K	1%	1/6W	
R110	1-249-417-11	CARBON	1K	5%	1/4W	F
R126	1-215-429-00	METAL	2.2K	1%	1/6W	
R203	1-249-429-11	CARBON	10K	5%	1/4W	
R204	1-249-429-11	CARBON	10K	5%	1/4W	
R205	1-249-429-11	CARBON	10K	5%	1/4W	
R206	1-249-436-11	CARBON	39K	5%	1/4W	
R207	1-249-437-11	CARBON	47K	5%	1/4W	
R208	1-249-417-11	CARBON	1K	5%	1/4W	F
R209	1-249-438-11	CARBON	56K	5%	1/4W	
R210	1-249-429-11	CARBON	10K	5%	1/4W	
R211	1-247-840-00	CARBON	2.4K	5%	1/4W	
R212	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R213	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R214	1-247-885-00	CARBON	180K	5%	1/4W	
R215	1-249-432-11	CARBON	18K	5%	1/4W	
R216	1-249-417-11	CARBON	1K	5%	1/4W	F
R217	1-249-433-11	CARBON	22K	5%	1/4W	
R218	1-249-436-11	CARBON	39K	5%	1/4W	
R219	1-249-433-11	CARBON	22K	5%	1/4W	
R220	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R222	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R224	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R225	1-249-437-11	CARBON	47K	5%	1/4W	
R226	1-249-437-11	CARBON	47K	5%	1/4W	
R311	1-249-429-11	CARBON	10K	5%	1/4W	
R355	1-249-429-11	CARBON	10K	5%	1/4W	
R356	1-249-429-11	CARBON	10K	5%	1/4W	
R359	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R362	1-249-417-11	CARBON	1K	5%	1/4W	F
R363	1-249-417-11	CARBON	1K	5%	1/4W	F
R364	1-249-434-11	CARBON	27K	5%	1/4W	
R365	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R366	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R367	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R368	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R369	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R370	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R371	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R372	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R373	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R374	1-249-424-11	CARBON	3.9K	5%	1/4W	F
R375	1-249-401-11	CARBON	47	5%	1/4W	F
R376	1-249-401-11	CARBON	47	5%	1/4W	F
R379	1-249-429-11	CARBON	10K	5%	1/4W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R401	1-249-437-11	CARBON 47K 5% 1/4W	
R402	1-247-891-00	CARBON 330K 5% 1/4W	(920HF)
R402	1-249-437-11	CARBON 47K 5% 1/4W	(770HF/771HF)
R403	1-249-409-11	CARBON 220 5% 1/4W	F
R404	1-247-891-00	CARBON 330K 5% 1/4W	
R405	1-215-443-00	METAL 8.2K 1% 1/6W	(770HF/771HF)
R405	1-249-428-11	CARBON 8.2K 5% 1/4W	F (920HF)
R406	1-215-443-00	METAL 8.2K 1% 1/6W	(770HF/771HF)
R406	1-249-428-11	CARBON 8.2K 5% 1/4W	F (920HF)
R407	1-249-435-11	CARBON 33K 5% 1/4W	
R408	1-249-432-11	CARBON 18K 5% 1/4W	
R409	1-259-880-11	CARBON 2.2M 5% 1/4W	
R410	1-249-429-11	CARBON 10K 5% 1/4W	
R411	1-249-435-11	CARBON 33K 5% 1/4W	
R418	1-249-409-11	CARBON 220 5% 1/4W	F
R419	1-249-431-11	CARBON 15K 5% 1/4W	
R420	1-249-411-11	CARBON 330 5% 1/4W	
R421	1-249-414-11	CARBON 560 5% 1/4W	F
R422	1-249-426-11	CARBON 5.6K 5% 1/4W	
R423	1-249-437-11	CARBON 47K 5% 1/4W	
R424	1-249-434-11	CARBON 27K 5% 1/4W	
R425	1-249-441-11	CARBON 100K 5% 1/4W	
R426	1-249-434-11	CARBON 27K 5% 1/4W	
R854	1-215-439-00	METAL 5.6K 1% 1/6W	
R855	1-215-423-00	METAL 1.2K 1% 1/6W	
R858	1-249-437-11	CARBON 47K 5% 1/4W	
R859	1-249-429-11	CARBON 10K 5% 1/4W	
R860	1-249-435-11	CARBON 33K 5% 1/4W	
R861	1-249-440-11	CARBON 82K 5% 1/4W	
R866	1-249-393-11	CARBON 10 5% 1/4W	F
R868	1-249-433-11	CARBON 22K 5% 1/4W	
R869	1-249-389-11	CARBON 4.7 5% 1/4W	F (770HF/771HF)
R869	1-249-395-11	CARBON 15 5% 1/4W	F (920HF)
R870	1-249-434-11	CARBON 27K 5% 1/4W	(920HF)
R871	1-249-394-11	CARBON 12 5% 1/6W	F (920HF)
R880	1-249-429-11	CARBON 10K 5% 1/4W	(770HF/771HF)
R898	1-249-417-11	CARBON 1K 5% 1/4W	F (920HF)
R899	1-249-417-11	CARBON 1K 5% 1/4W	F
		< VARIABLE RESISTOR >	
RV201	1-238-019-11	RES, ADJ, CARBON 47K	
RV202	1-238-019-11	RES, ADJ, CARBON 47K	
RV851	1-241-767-21	RES, ADJ, CARBON 100K	(920HF)

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S001	1-570-953-11	SWITCH, PUSH (1 KEY) (CASSETTE UP/DOWN)	
S002	1-570-953-11	SWITCH, PUSH (1 KEY) (REC PROOF)	
		< TRANSFORMER >	
T851	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(920HF)
T851	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	(770HF/771HF)
T852	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(920HF)
		< VIBRATOR >	
X201	1-578-774-11	VIBRATOR, CRYSTAL (12MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-6721-584-A	MF-226 BOARD, COMPLETE ********************** (770HF:US/771HF/920HF:US)	
*	A-6721-606-A	MF-226 BOARD, COMPLETE ********************** (770HF:CND/920HF:CND, MX, CS, PL, PX, JE) (Ref. NO. 5,000 Series)	
*	3-957-314-11	HOLDER, LCD	
	3-957-327-01	RIVET, PUSH	
	3-957-338-01	ILLUMINATOR	
	3-697-607-01	HOLDER, LED	
		< CAPACITOR >	
C301	1-126-157-11	ELECT 10uF 20% 16V	
C302	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C303	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C304	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C305	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C306	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C320	1-126-176-11	ELECT 220uF 20% 10V	
		< CONNECTOR >	
* CN301	1-750-192-21	CONNECTOR, BOARD TO BOARD 22P	
* CN303	1-695-329-31	PIN, CONNECTOR (PC BOARD) 6P	
* CN304	1-564-014-51	PIN, CONNECTOR 4P	
		< DIODE >	
D301	8-719-940-XX	DIODE SLR-34VCA49 (REC)	
D302	8-719-940-XX	DIODE SLR-34VCA49 (TIMER)	
D303	8-719-946-30	LED SLR34DC3 (PAUSE)	
D304	8-719-812-32	LED TLY123 (HI-SPEED REW/ND)	
D305	8-719-801-78	DIODE 1SS184	
D306	8-719-109-93	DIODE RD6.2ES-B2	
D307	8-719-109-93	DIODE RD6.2ES-B2	

Ref. No.	Part No.	Description	Remark
D308	8-719-109-93	DIODE RD6.2ES-B2	
D309	8-719-109-93	DIODE RD6.2ES-B2	
D310	8-719-109-93	DIODE RD6.2ES-B2	
		< IC >	
IC301	8-759-249-78	IC LC75850E	
		< JUMPER RESISTOR >	
JR302	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR303	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< LIQUID CRYSTAL >	
LC301	1-810-353-11	DISPLAY PANEL, LIQUID CRYSTAL	
		< COIL >	
L301	1-408-401-00	INDUCTOR 2.2uH	
L302	1-410-509-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q301	8-729-421-19	TRANSISTOR UN2213	
Q302	8-729-421-19	TRANSISTOR UN2213	
Q303	8-729-421-19	TRANSISTOR UN2213	
Q304	8-729-421-19	TRANSISTOR UN2213	
Q305	8-729-421-19	TRANSISTOR UN2213	
Q307	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R301	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R302	1-249-429-11	CARBON 10K 5% 1/4W	
R303	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R304	1-216-035-00	METAL CHIP 270 5% 1/10W	
R305	1-216-035-00	METAL CHIP 270 5% 1/10W	
R306	1-216-037-00	METAL CHIP 330 5% 1/10W	
R307	1-249-408-11	CARBON 180 5% 1/4W	F
R308	1-216-031-00	METAL CHIP 180 5% 1/10W	
R309	1-216-031-00	METAL CHIP 180 5% 1/10W	
R310	1-216-031-00	METAL CHIP 180 5% 1/10W	
R311	1-216-031-00	METAL CHIP 180 5% 1/10W	
R312	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R313	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R317	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R318	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R319	1-216-013-00	METAL CHIP 33 5% 1/10W	
R320	1-216-013-00	METAL CHIP 33 5% 1/10W	
R321	1-216-262-00	METAL GLAZE 470K 5% 1/8W	
R322	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R323	1-216-262-00	METAL GLAZE 470K 5% 1/8W	
R324	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R325	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
		< SWITCH >	
S301	1-571-977-11	SWITCH, TACTIL (HI-SPEED REW/ND)	
S302	1-571-977-11	SWITCH, TACTIL (PAUSE)	
S303	1-692-726-11	SWITCH, ROTARY (LED) (PLAY/STOP/REW/FF)	

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Ref. No.	Part No.	Description	Remark
*	A-6720-582-A	MF-227 BOARD, COMPLETE (920HF) **********************	
*	A-6720-583-A	MF-227 BOARD, COMPLETE (770HF/771HF) ********************** (Ref.NO. 5,000 Series)	
		< CAPACITOR >	
C605	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN601	1-695-820-11	CONNECTOR, BOARD TO BOARD 12P	
		< DIODE >	
D601	8-719-970-67	DIODE SLR-34MCA49 (POWER)	
D602	8-719-970-67	DIODE SLR-34MCA49 (POWER)	
D606	8-719-108-12	DIODE RD9.1E-W	
D607	8-719-108-12	DIODE RD9.1E-W	
D608	8-719-108-12	DIODE RD9.1E-W	
D610	8-719-109-93	DIODE RD6.2ES-B2	
		< IC >	
IC601	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON	
		< JACK >	
PJ601	1-695-865-11	JACK, PIN 3P (LINE IN 2)	
		< TRANSISTOR >	
Q601	8-729-421-19	TRANSISTOR UN2213	
		< RESISTOR >	
R601	1-216-238-91	METAL GLAZE 47K 5% 1/8W	
R603	1-216-295-00	METAL CHIP 0 5% 1/10W	
R604	1-216-295-00	METAL CHIP 0 5% 1/10W	
R605	1-216-170-00	METAL GLAZE 68 5% 1/8W	
R607	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S601	1-571-977-11	SWITCH, TACTIL (POWER)	
S602	1-571-977-11	SWITCH, TACTIL (EJECT)	
**			
*	A-6720-585-A	PL-24 BOARD, COMPLATE *********************	
			(Ref. NO. 5,000 Series)
		< CONNECTOR >	
CN601	1-506-469-11	PIN, CONNECTOR 4P	
		< DIODE >	
D601	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
D602	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
D603	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
D604	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
		< PILOT LAMP >	
PL601	1-517-254-11	LAMP, PILOT (LCD BACK LIGHT)	
PL602	1-517-254-11	LAMP, PILOT (LCD BAK LIGHT)	
PL603	1-517-254-11	LAMP, PILOT (LCD BAK LIGHT)	
**			
*⚠	A-6727-522-A	PT-95 BOARD, COMPLETE (920HF:US, CND, MX) *********************	
*⚠	A-6727-524-A	PT-95 BOARD, COMPLETE (770HF/771HF) *********************	
*⚠	A-6727-553-A	PT-95 BOARD, COMPLETE (920HF:CS, PL, PX, JE) *********************	
			(Ref. NO. 3,000 Series)
	1-558-924-21	CABLE, PIN	
*	3-951-893-01	HEAT SINK	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
		< BUZZER >	
BZ401	1-529-080-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
⚠C101	1-104-705-11	FILM 0.1uF 20% 250V	
⚠C102	1-104-705-11	FILM 0.1uF 20% 250V	
⚠C103	1-107-401-11	ELECT 150uF 20% 200V	(770HF/771HF/920HF:US, CND, MX)
⚠C103	1-107-414-11	ELECT 220uF 20% 400V	(920HF:CS, PL, PX, JE)
⚠C104	1-161-740-00	CERAMIC 470PF 10% 400V	(770HF/771HF/920HF:US, CND, MX)
⚠C104	1-161-741-00	CERAMIC 0.001uF 10% 400V	(920HF:CS, PL, PX, JE)
⚠C105	1-161-740-00	CERAMIC 470PF 10% 400V	(770HF/771HF/920HF:US, CND, MX)
⚠C105	1-161-741-00	CERAMIC 0.001uF 10% 400V	(920HF:CS, PL, PX, JE)
⚠C106	1-161-741-00	CERAMIC 0.001uF 10% 400V	(920HF:CS, PL, PX, JE)
⚠C107	1-104-973-21	CERAMIC 0.0015uF 20% 400V	(770HF/771HF/920HF:US, CND, MX)
⚠C107	1-161-741-00	CERAMIC 0.001uF 10% 400V	(920HF:CS, PL, PX, JE)
⚠C108	1-161-741-00	CERAMIC 0.001uF 10% 400V	(920HF:CS, PL, PX, JE)
C121	1-126-103-11	ELECT 470uF 20% 16V	
C122	1-124-471-00	ELECT 1000uF 20% 6.3V	
C125	1-126-233-11	ELECT 22uF 20% 50V	
C131	1-124-120-11	ELECT 220uF 20% 25V	
C132	1-126-233-11	ELECT 22uF 20% 50V	
C141	1-124-477-11	ELECT 47uF 20% 25V	
C142	1-126-101-11	ELECT 100uF 20% 16V	
C152	1-124-443-00	ELECT 100uF 20% 10V	
C161	1-124-126-00	ELECT 47uF 20% 10V	
C162	1-124-442-00	ELECT 330uF 20% 6.3V	
C171	1-124-442-00	ELECT 330uF 20% 6.3V	
C181	1-124-589-11	ELECT 47uF 20% 16V	
C182	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C183	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C184	1-126-157-11	ELECT 10uF 20% 16V	
C185	1-124-261-00	ELECT 10uF 20% 50V	
C186	1-124-261-00	ELECT 10uF 20% 50V	
C187	1-124-261-00	ELECT 10uF 20% 50V	
C189	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C190	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C195	1-124-589-11	ELECT 47uF 20% 16V	
C196	1-124-589-11	ELECT 47uF 20% 16V	
C197	1-124-589-11	ELECT 47uF 20% 16V	
C401	1-124-257-00	ELECT 2.2uF 20% 50V	
C402	1-163-205-00	CERAMIC CHIP 0.001uF 5% 50V	
C404	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C405	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C406	1-125-705-11	CAP, DOUBLE LAYERS 0.22F	
C407	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C408	1-124-442-00	ELECT 330uF 20% 6.3V	
C409	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C410	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C411	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C412	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C414	1-163-031-11	CERAMIC CHIP 0.01uF 50V	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C415	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C451	1-124-443-00	ELECT	100uF	20%	10V
C452	1-124-584-00	ELECT	100uF	20%	10V
C804	1-126-233-11	ELECT	22uF	20%	50V
C808	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C809	1-126-101-11	ELECT	100uF	20%	16V
C810	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C811	1-124-927-11	ELECT	4.7uF	20%	100V
C812	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C814	1-124-126-00	ELECT	47uF	20%	10V
C817	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C819	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C820	1-124-126-00	ELECT	47uF	20%	10V
C824	1-124-907-11	ELECT	10uF	20%	50V
C825	1-124-907-11	ELECT	10uF	20%	50V
C826	1-124-907-11	ELECT	10uF	20%	50V
C828	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C829	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C830	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C836	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C863	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C865	1-163-031-11	CERAMIC CHIP	0.01uF		50V

< JACK >

⚠CJ101	1-251-134-11	INLET, AC(NONPOLAR) (920HF:CS, PL, PX, JE)
⚠CJ101	1-251-135-11	INLET, AC. (770HF/771HF/920HF:US, CND, MX)
CJ401	1-691-258-21	JACK (CABLE BOX CONTROL)
CJ402	1-507-562-00	JACK (CONTROL S IN)

< CONNECTOR >

CN401	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P
CN402	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P
* CN403	1-750-201-21	CONNECTOR, BOARD TO BOARD 22P
* CN404	1-573-845-11	CONNECTOR, BOARD TO BOARD 13P
* CN405	1-573-845-11	CONNECTOR, BOARD TO BOARD 13P

< COMPOSITION CIRCUIT BLOCK >

⚠CP101	1-413-895-11	POWER BLOCK
⚠CP101	1-413-896-11	POWER BLOCK (920HF:CS, PL, PX, JE)

< TRIMMER >

CT412	1-141-442-91	TRIMMER, CERAMIC

< DIODE >

⚠D101	8-719-510-06	DIODE	S1WB60
⚠D131	8-719-200-82	DIODE	11ES2
D161	8-719-911-19	DIODE	1SS119
D162	8-719-109-85	DIODE	RD5.1ES-B2
⚠D181	8-719-911-19	DIODE	1SS119
⚠D182	8-719-911-19	DIODE	1SS119
⚠D183	8-719-911-19	DIODE	1SS119
⚠D184	8-719-911-19	DIODE	1SS119
⚠D195	8-719-911-19	DIODE	1SS119
⚠D196	8-719-911-19	DIODE	1SS119
D401	8-719-801-78	DIODE	1SS184
D402	8-719-200-82	DIODE	11ES2
⚠D403	8-719-200-82	DIODE	11ES2
D404	8-719-911-19	DIODE	1SS119
D491	8-719-109-96	DIODE	RD6.8ES-B1
D492	8-719-109-96	DIODE	RD6.8ES-B1
D493	8-719-109-96	DIODE	RD6.8ES-B1
⚠D801	8-719-110-78	DIODE	RD33ES-B2
D802	8-719-800-76	DIODE	1SS226
D803	8-719-911-19	DIODE	1SS119
⚠D865	8-719-200-82	DIODE	11ES2

< FUSE >

⚠F101	1-532-743-11	FUSE, GLASS CYLINDRICAL(DIA. 5) (2A 125V) (770HF/771HF/920HF:US, CND, MX)
⚠F101	1-576-228-11	FUSE (H. B. C.) (2A 125V) (920HF:CS, PL, PX, JE)

< FUSE HOLDER >

* FH101	1-533-293-11	FUSE HOLDER
* FH102	1-533-293-11	FUSE HOLDER

< FILTER >

FL184	1-239-803-11	FILTER, EMI
FL195	1-239-803-11	FILTER, EMI

< IC >

⚠IC141	8-759-189-48	IC	PQ12RE11
⚠IC151	8-759-189-49	IC	PQ09NF1S
⚠IC181	8-759-189-47	IC	MC34151DR2
IC401	8-759-247-48	IC	MB89096-120
IC402	8-759-502-00	IC	ST93CS56B1
IC405	8-759-249-28	IC	MM1254XFBE

< JUMPER RESISTOR >

JR111	1-216-296-00	METAL CHIP	0	5%	1/8W
JR151	1-216-295-00	METAL CHIP	0	5%	1/10W
JR401	1-216-296-00	METAL CHIP	0	5%	1/8W
JR402	1-216-296-00	METAL CHIP	0	5%	1/8W
JR403	1-216-296-00	METAL CHIP	0	5%	1/8W
JR404	1-216-296-00	METAL CHIP	0	5%	1/8W

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Ref. No.	Part No.	Description	Remark
JR405	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR406	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR407	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR408	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR409	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR410	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR412	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR413	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR444	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR802	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR803	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR811	1-216-296-00	METAL CHIP 0 5% 1/8W	
JW441	1-410-396-41	FERRITE BEAD INDUCTOR	
JW455	1-410-509-11	INDUCTOR 10uH	
		< COIL >	
⚠L121	1-403-588-11	CIL, CHOKE 22uH	
⚠L122	1-403-588-11	CIL, CHOKE 22uH	
L181	1-408-421-00	INDUCTOR 100uH	
L182	1-410-521-11	INDUCTOR 100uH	
L195	1-410-521-11	INDUCTOR 100uH	
L404	1-414-183-41	INDUCTOR 10uH	
L460	1-410-509-11	INDUCTOR 10uH	
L801	1-414-189-31	INDUCTOR 100uH	
L802	1-414-183-41	INDUCTOR 10uH	
L804	1-414-183-41	INDUCTOR 10uH	
L861	1-408-401-00	INDUCTOR 2.2uH	
		< LINE FILTER >	
⚠LF101	1-424-117-11	FILTER, LINE	
⚠LF102	1-424-117-11	FILTER, LINE (920HF:CS, PL, PX, JE)	
		< IC LINK >	
⚠PS121	1-532-637-00	LINK, IC 1.0A	
⚠PS123	1-532-675-00	LINK, IC 1.5A	
⚠PS801	1-532-679-00	LINK, IC	
		< TRANSISTOR >	
⚠Q131	8-729-140-93	TRANSISTOR 2SB733-34	
Q132	8-729-421-22	TRANSISTOR UN2211	
⚠Q161	8-729-140-98	TRANSISTOR 2SD773-34	
Q401	8-729-424-18	TRANSISTOR UN2113	
Q402	8-729-421-19	TRANSISTOR UN2213	
Q420	8-729-216-22	TRANSISTOR 2SA1162-G	
Q451	8-729-018-99	TRANSISTOR 2SD2394-F	
Q452	8-729-902-XX	TRANSISTOR DTC114TK-T146	
Q453	8-729-902-XX	TRANSISTOR DTC114TK-T146	
⚠Q801	8-729-173-38	TRANSISTOR 2SA733-K	

Ref. No.	Part No.	Description	Remark
Q802	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q803	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q804	8-729-422-27	TRANSISTOR 2SD601A-Q	
		< RESISTOR >	
R101	1-214-947-00	METAL 2.7M 1% 1/2W (920HF:CS, PL, PX, JE)	
R102	1-202-729-00	SOLID 6.8M 20% 1/2W (770HF/771HF/920HF:US, CND, MX)	
R125	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R131	1-249-417-11	CARBON 1K 5% 1/4W	F
R132	1-260-099-11	CARBON 1K 5% 1/2W	
R133	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R161	1-249-412-11	CARBON 390 5% 1/4W	F
R181	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R182	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R401	1-216-056-00	METAL GLAZE 2K 5% 1/10W	
R405	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R407	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R408	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R409	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R412	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R420	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R421	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R431	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R432	1-216-198-91	METAL GLAZE 1K 5% 1/8W	
R433	1-249-417-11	CARBON 1K 5% 1/4W	F
R453	1-216-047-00	METAL CHIP 820 5% 1/10W	
R454	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R455	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R457	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R459	1-260-087-11	CARBON 100 5% 1/2W	
R460	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R462	1-216-296-00	METAL CHIP 0 5% 1/8W	
R463	1-249-417-11	CARBON 1K 5% 1/4W	F
R464	1-249-417-11	CARBON 1K 5% 1/4W	F
R465	1-249-417-11	CARBON 1K 5% 1/4W	F
R466	1-249-417-11	CARBON 1K 5% 1/4W	F
R467	1-249-417-11	CARBON 1K 5% 1/4W	F
R469	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R470	1-216-057-00	METAL CHIP 2.2K 5% 1/10W (920HF:US, MX, CS, PL, PX, JE)	
R470	1-216-065-00	METAL CHIP 4.7K 5% 1/10W (770HF:CND)	
R470	1-216-071-00	METAL CHIP 8.2K 5% 1/10W (920HF:CND)	
R470	1-216-295-00	METAL CHIP 0 5% 1/10W (770HF:US/771HF)	
R471	1-216-222-00	METAL GLAZE 10K 5% 1/8W	
R473	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R474	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R475	1-216-049-00	METAL CHIP 1K 5% 1/10W	

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Ref. No.	Part No.	Description			Remark
R478	1-249-417-11	CARBON	1K	5%	1/4W F
R484	1-216-049-00	METAL CHIP	1K	5%	1/10W
R485	1-249-417-11	CARBON	1K	5%	1/4W F
R487	1-216-049-00	METAL CHIP	1K	5%	1/10W
R488	1-216-295-00	METAL CHIP	0	5%	1/10W
R491	1-216-296-00	METAL CHIP	0	5%	1/8W
R492	1-216-295-00	METAL CHIP	0	5%	1/10W
R801	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R802	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R803	1-216-182-91	METAL GLAZE	220	5%	1/8W
R804	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R805	1-216-025-00	METAL CHIP	100	5%	1/10W
R806	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R807	1-216-075-00	METAL CHIP	12K	5%	1/10W
R808	1-216-049-00	METAL CHIP	1K	5%	1/10W
R810	1-216-025-00	METAL CHIP	100	5%	1/10W
R811	1-216-037-00	METAL CHIP	330	5%	1/10W
R812	1-216-037-00	METAL CHIP	330	5%	1/10W
R813	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R816	1-216-081-00	METAL CHIP	22K	5%	1/10W
R823	1-216-049-00	METAL CHIP	1K	5%	1/10W
R824	1-249-417-11	CARBON	1K	5%	1/4W F
R825	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R826	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R827	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R828	1-216-093-00	METAL CHIP	68K	5%	1/10W
R836	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R862	1-216-295-00	METAL CHIP	0	5%	1/10W
R863	1-216-049-00	METAL CHIP	1K	5%	1/10W

< RF MODULATOR >

Ref. No.	Part No.	Description
⚠RF801	1-466-989-11	MODULATOR, RF

< TUNER >

Ref. No.	Part No.	Description
⚠TU802	8-598-039-10	TUNER BTF-WA401

< VIBRATOR >

Ref. No.	Part No.	Description
X401	1-579-436-11	VIBLATOR, CRYSTAL (32KHz)
X402	1-579-175-11	VIBRATOR, CERAMIC (10MHz)

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* A-6727-523-A RV-33 BOARD, COMPLETE (920HF)

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* A-6727-525-A RV-33 BOARD, COMPLETE (770HF/771HF)

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(Ref. NO. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C001	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C002	1-164-699-11	CERAMIC CHIP	0.0033uF	5%	50V
C003	1-124-465-00	ELECT	0.47uF	20%	50V
C004	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C005	1-163-114-00	CERAMIC CHIP	75PF	5%	50V
C006	1-124-257-00	ELECT	2.2uF	20%	50V
C007	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C010	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C011	1-124-463-00	ELECT	0.1uF	20%	50V
C012	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C013	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C016	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C018	1-126-163-11	ELECT	4.7uF	20%	50V
C019	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C026	1-126-157-11	ELECT	10uF	20%	16V
C027	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C029	1-124-465-00	ELECT	0.47uF	20%	50V
C030	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C031	1-124-638-11	ELECT	22uF	20%	10V
C032	1-126-157-11	ELECT	10uF	20%	16V (920HF)
C032	1-126-162-11	ELECT	3.3uF	20%	50V
C033	1-124-638-11	ELECT	22uF	20%	10V
C034	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C036	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C038	1-163-087-00	CERAMIC CHIP	4PF		50V
C039	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C043	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C045	1-124-257-00	ELECT	2.2uF	20%	50V
C046	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C047	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C048	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C049	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C050	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C052	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C053	1-124-465-00	ELECT	0.47uF	20%	50V
C055	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C056	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C057	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C058	1-124-465-00	ELECT	0.47uF	20%	50V
C059	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C060	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C061	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C062	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C063	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C064	1-124-638-11	ELECT	22uF	20%	10V

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Ref. No.	Part No.	Description			Remark
C065	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C066	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C067	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C073	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C075	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C079	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C081	1-163-089-00	CERAMIC CHIP	6PF		50V
C083	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C086	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C087	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C098	1-124-638-11	ELECT	22uF	20%	10V
C099	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C102	1-163-130-00	CERAMIC CHIP	360PF	5%	50V
C120	1-124-638-11	ELECT	22uF	20%	10V
C121	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C260	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C261	1-124-584-00	ELECT	100uF	20%	10V
C262	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C263	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C264	1-124-257-00	ELECT	2.2uF	20%	50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C267	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C268	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C269	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C270	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C274	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C275	1-126-160-11	ELECT	1uF	20%	50V
C276	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C801	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C802	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C803	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C804	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C805	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C806	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C808	1-124-584-00	ELECT	100uF	20%	10V
C809	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C810	1-124-584-00	ELECT	100uF	20%	10V
C811	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C813	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C814	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C815	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C816	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C817	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C818	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C822	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C826	1-124-229-00	ELECT	33uF	20%	10V
C827	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C829	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C830	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C836	1-163-099-00	CERAMIC CHIP	18PF	5%	50V (920HF)
C839	1-163-099-00	CERAMIC CHIP	18PF	5%	50V (920HF)
C890	1-164-232-11	CERAMIC CHIP	0.01uF		50V (920HF)
C893	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (920HF)
C894	1-163-121-00	CERAMIC CHIP	150PF	5%	50V (920HF)
C895	1-163-245-11	CERAMIC CHIP	56PF	5%	50V (920HF)
C896	1-163-038-00	CERAMIC CHIP	0.1uF		25V (920HF)
C897	1-126-157-11	ELECT	10uF	20%	16V (920HF)
C901	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C902	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C903	1-163-087-00	CERAMIC CHIP	4PF		50V
C904	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C907	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C908	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C909	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C910	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C911	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C912	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C913	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C914	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C916	1-216-295-00	METAL CHIP	0	5%	1/10W
C917	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C918	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C920	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C921	1-124-638-11	ELECT	22uF	20%	10V

< CONNECTOR >

Ref. No.	Part No.	Description
CN001	1-573-828-11	CONNECTOR, BOARD TO BOARD 14P
CN002	1-573-834-11	CONNECTOR, BOARD TO BOARD 20P
CN801	1-563-590-11	CONNECTOR, FLEXIBLE 13P
* CN802	1-564-029-00	PIN, CONNECTOR 4P
* CN803	1-564-013-11	PIN, CONNECTOR 3P

< DIODE >

Ref. No.	Part No.	Description	
D801	8-719-801-78	DIODE	1SS184
D802	8-719-801-78	DIODE	1SS184
D803	8-719-801-78	DIODE	1SS184
D901	8-719-951-22	IC	IMN10

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Ref. No.	Part No.	Description	Remark
		< DELAY LINE >	
DL001	1-415-668-11	DELAY LINE, ULTRASONIC	
DL001	1-415-668-31	DELAY LINE, ULTRASONIC	
		< IC >	
IC001	8-759-183-95	IC HA118385FEB	
IC003	8-759-194-19	IC MSM7450MS-K-TP	
IC260	8-759-055-49	IC AN3327K	
IC801	8-759-194-25	IC HA118191NT	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	METAL CHIP 0 5%	1/10W
JR022	1-216-295-00	METAL CHIP 0 5%	1/10W
		< COIL >	
L001	1-408-970-21	INDUCTOR 10uH	
L002	1-408-975-21	INDUCTOR 27uH	
L003	1-408-970-21	INDUCTOR 10uH	
L006	1-408-976-21	INDUCTOR 33uH	
L007	1-408-982-11	INDUCTOR 100uH	
L008	1-408-982-11	INDUCTOR 100uH	
L009	1-408-980-21	INDUCTOR 68uH	
L010	1-408-976-21	INDUCTOR 33uH	
L011	1-408-983-21	INDUCTOR 120uH	
L012	1-408-429-00	INDUCTOR 470uH	
L013	1-408-427-00	INDUCTOR 330uH	
L014	1-408-978-21	INDUCTOR 47uH	
L015	1-408-982-11	INDUCTOR 100uH	
L017	1-408-948-00	INDUCTOR 220uH	
L018	1-408-982-11	INDUCTOR 100uH	
L260	1-408-982-11	INDUCTOR 100uH	
L801	1-408-948-00	INDUCTOR 220uH	
L802	1-408-948-00	INDUCTOR 220uH	
L803	1-408-982-11	INDUCTOR 100uH	
L804	1-408-982-11	INDUCTOR 100uH	
L810	1-408-985-21	INDUCTOR 180uH	
L812	1-408-982-11	INDUCTOR 100uH	
L813	1-408-970-21	INDUCTOR 10uH (920HF)	
L814	1-408-970-21	INDUCTOR 10uH (920HF)	
L890	1-408-968-21	INDUCTOR 6.8uH (920HF)	
L891	1-408-982-11	INDUCTOR 100uH (920HF)	
L901	1-408-977-21	INDUCTOR 39uH	
L902	1-408-948-00	INDUCTOR 220uH	
L908	1-408-982-11	INDUCTOR 100uH	
L909	1-408-977-21	INDUCTOR 39uH	
		< TRANSISTOR >	
Q003	8-729-010-25	TRANSISTOR MSD601-RT1	
Q004	8-729-010-25	TRANSISTOR MSD601-RT1	
Q006	8-729-010-25	TRANSISTOR MSD601-RT1	
Q007	8-729-010-05	TRANSISTOR MSB709-RT1	
Q011	8-729-010-25	TRANSISTOR MSD601-RT1	
Q013	8-729-010-25	TRANSISTOR MSD601-RT1	
Q016	8-729-424-56	TRANSISTOR UN211L	
Q018	8-729-424-18	TRANSISTOR UN2113	
Q021	8-729-421-19	TRANSISTOR UN2213	
Q029	8-729-421-19	TRANSISTOR UN2213	
Q030	8-729-421-19	TRANSISTOR UN2213	
Q031	8-729-424-08	TRANSISTOR UN2111	
Q034	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q040	8-729-421-19	TRANSISTOR UN2213	
Q051	8-729-421-19	TRANSISTOR UN2213	
Q810	8-729-421-19	TRANSISTOR UN2213	
Q811	8-729-921-12	TRANSISTOR 2SD1834	
Q817	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q818	8-729-421-19	TRANSISTOR UN2213	
Q819	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q840	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q841	8-729-216-21	TRANSISTOR 2SA1162Y	
Q890	8-729-216-22	TRANSISTOR 2SA1162-G (920HF)	
Q891	8-729-216-22	TRANSISTOR 2SA1162-G (920HF)	
Q892	8-729-421-19	TRANSISTOR UN2213 (920HF)	
Q904	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q906	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q907	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q908	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q909	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q911	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q912	8-729-216-21	TRANSISTOR 2SA1162Y	
Q936	8-729-424-08	TRANSISTOR UN2111	
		< RESISTOR >	
R001	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R002	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R003	1-216-049-00	METAL CHIP 1K 5%	1/10W
R010	1-216-081-00	METAL CHIP 22K 5%	1/10W
R012	1-216-081-00	METAL CHIP 22K 5%	1/10W
R014	1-216-081-00	METAL CHIP 22K 5%	1/10W
R016	1-216-049-00	METAL CHIP 1K 5%	1/10W
R018	1-216-037-00	METAL CHIP 330 5%	1/10W
R019	1-216-037-00	METAL CHIP 330 5%	1/10W
R020	1-216-040-00	METAL GLAZE 430 5%	1/10W
R021	1-216-049-00	METAL CHIP 1K 5%	1/10W
R027	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R029	1-216-049-00	METAL CHIP 1K 5%	1/10W
R030	1-216-049-00	METAL CHIP 1K 5%	1/10W
R040	1-216-121-00	METAL CHIP 1M 5%	1/10W

Ref.No.	Part No.	Description				Remark
R041	1-216-033-00	METAL CHIP	220	5%	1/10W	
R042	1-216-043-00	METAL CHIP	560	5%	1/10W	
R043	1-216-043-00	METAL CHIP	560	5%	1/10W	
R044	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R045	1-216-058-00	METAL GLAZE	2.4K	5%	1/10W	
R046	1-216-045-00	METAL CHIP	680	5%	1/10W	
R047	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R048	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R049	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R050	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R051	1-216-036-00	METAL CHIP	300	5%	1/10W	
R052	1-216-052-00	METAL CHIP	1.3K	5%	1/10W	
R053	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R055	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R056	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R057	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R058	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R059	1-216-037-00	METAL CHIP	330	5%	1/10W	
R060	1-216-043-00	METAL CHIP	560	5%	1/10W	
R065	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R066	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R067	1-216-295-00	METAL CHIP	0	5%	1/10W	
R069	1-216-047-00	METAL CHIP	820	5%	1/10W	
R071	1-216-058-00	METAL GLAZE	2.4K	5%	1/10W	
R072	1-216-072-00	METAL CHIP	9.1K	5%	1/10W	
R077	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R078	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R079	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R080	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R082	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R083	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R084	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R085	1-216-045-00	METAL CHIP	680	5%	1/10W	
R086	1-216-066-00	METAL CHIP	5.1K	5%	1/10W	
R088	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R091	1-216-295-00	METAL CHIP	0	5%	1/10W	
R094	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R099	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R102	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R113	1-216-295-00	METAL CHIP	0	5%	1/10W	
R119	1-216-066-00	METAL CHIP	5.1K	5%	1/10W	
R262	1-216-035-00	METAL CHIP	270	5%	1/10W	
R263	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R265	1-216-033-00	METAL CHIP	220	5%	1/10W	
R266	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R267	1-216-035-00	METAL CHIP	270	5%	1/10W	
R268	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R271	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R276	1-216-073-00	METAL CHIP	10K	5%	1/10W	

Ref.No.	Part No.	Description				Remark
R801	1-216-023-00	METAL CHIP	82	5%	1/10W	
R802	1-216-037-00	METAL CHIP	330	5%	1/10W	
R805	1-216-606-11	METAL CHIP	13	0.50%	1/10W	
R806	1-216-023-00	METAL CHIP	82	5%	1/10W	
R807	1-216-023-00	METAL CHIP	82	5%	1/10W	
R811	1-216-037-00	METAL CHIP	330	5%	1/10W	
R812	1-216-023-00	METAL CHIP	82	5%	1/10W	
R815	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R816	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R817	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R835	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R836	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R838	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R842	1-216-619-11	METAL CHIP	47	0.5%	1/10W	
R843	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R844	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R846	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R847	1-216-078-00	METAL GLAZE	16K	5%	1/10W	
R856	1-216-033-00	METAL CHIP	220	5%	1/10W	
R857	1-216-033-00	METAL CHIP	220	5%	1/10W	
R858	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R859	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R861	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R862	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R863	1-216-047-00	METAL CHIP	820	5%	1/10W	
R891	1-216-011-00	METAL CHIP	27	5%	1/10W	(920HF)
R894	1-216-041-00	METAL CHIP	470	5%	1/10W	(920HF)
R895	1-216-054-00	METAL GLAZE	1.6K	5%	1/10W	(920HF)
R896	1-216-095-00	METAL CHIP	82K	5%	1/10W	(920HF)
R897	1-216-089-91	METAL GLAZE	47K	5%	1/10W	(920HF)
R898	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	(920HF)
R901	1-216-039-00	METAL CHIP	390	5%	1/10W	
R902	1-216-033-00	METAL CHIP	220	5%	1/10W	
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R904	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R906	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R907	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R908	1-216-033-00	METAL CHIP	220	5%	1/10W	
R910	1-216-025-00	METAL CHIP	100	5%	1/10W	
R913	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R914	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R915	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R916	1-216-039-00	METAL CHIP	390	5%	1/10W	
R917	1-216-045-00	METAL CHIP	680	5%	1/10W	
R918	1-216-045-00	METAL CHIP	680	5%	1/10W	
R919	1-216-039-00	METAL CHIP	390	5%	1/10W	
R920	1-216-043-00	METAL CHIP	560	5%	1/10W	
R921	1-216-049-00	METAL CHIP	1K	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R922	1-216-041-00	METAL CHIP 470 5%	1/10W
R924	1-216-295-00	METAL CHIP 0 5%	1/10W
R925	1-216-045-00	METAL CHIP 680 5%	1/10W
R926	1-216-025-00	METAL CHIP 100 5%	1/10W
R927	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R928	1-216-071-00	METAL CHIP 8.2K 5%	1/10W
R929	1-216-043-00	METAL CHIP 560 5%	1/10W
R936	1-216-043-00	METAL CHIP 560 5%	1/10W
R937	1-216-043-00	METAL CHIP 560 5%	1/10W
R938	1-216-047-00	METAL CHIP 820 5%	1/10W
R939	1-216-049-00	METAL CHIP 1K 5%	1/10W
R966	1-216-057-00	METAL CHIP 2.2K 5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV001	1-238-856-11	RES, ADJ, CERMET 10K	
RV003	1-238-856-11	RES, ADJ, CERMET 10K	
RV004	1-238-856-11	RES, ADJ, CERMET 10K	
RV005	1-238-856-11	RES, ADJ, CERMET 10K	
RV006	1-238-857-11	RES, ADJ, CERMET 22K	
RV009	1-238-854-11	RES, ADJ, CERMET 2.2K	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T001	1-406-967-11	COIL, TUNK	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X001	1-760-119-11	VIBRATOR, CRYSTAL (3.58MHz)	

****

MISCELLANEOUS

****

Ref. No.	Part No.	Description	Remark
1	1-467-386-31	SWITCH BLOCK, CONTROL (920HF:US, CND)	
1	1-467-386-41	SWITCH BLOCK, CONTROL (770HF/771HF)	
1	1-467-386-51	SWITCH BLOCK, CONTROL (920HF:MX, CS, PL, PX, JE)	
260	1-543-647-11	HEAD, FE	
282	8-848-576-01	DRUM ASSY, ROTARY UPPER (DZR-45-R) (770HF/771HF)	
282	8-848-581-01	DRUM ASSY, ROTARY UPPER (DZR-49-R) (920HF)	
M901	8-848-575-11	DRUM ASSY DZH-45A-R (770HF/771HF)	
M901	8-848-580-11	DRUM ASSY DZH-49A-R (920HF)	
M902	8-835-489-01	MOTOR, DC U-26K	
M903	X-3733-302-1	MOTOR ASSY, CAM	
M904	X-3727-784-1	MOTOR ASSY	

****

ACCESSORIES & PACKING MATERIALS

****

Ref. No.	Part No.	Description	Remark
	1-466-905-11	CABLE MOUSE (770HF/771HF/920HF:US, CND, MX, CS, PL, PX)	
	1-467-383-11	REMOTE COMMANDER (RMT-V140A) (770HF/771HF)	
	1-467-383-21	REMOTE COMMANDER (RMT-V140) (920HF)	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (920HF:CS, PL, PX, JE)	
⚠	1-575-131-11	CORD, POWER (920HF:CS, PL, PX, JE)	
	1-575-334-11	CORD, CONNECTION (AUDIO/VIDEO CABLE 1.5m)	
	1-696-592-11	CORD, CONNECTION (NTSC) (75-OHM, COAXIAL CABLE 1.5m)	
⚠	1-751-676-11	CORD, POWER (770HF/771HF/920HF:US, CND, MX)	
	3-757-904-21	MANUAL, INSTRUCTION (ENGLISH) (770HF)	
	3-757-904-31	MANUAL, INSTRUCTION (FRENCH) (770HF:CND)	
	3-757-936-11	MANUAL, INSTRUCTION (ENGLISH) (920HF:MX, CS, PL, PX, JE)	
	3-757-936-21	MANUAL, INSTRUCTION (ENGLISH) (920HF:US, CND)	
	3-757-936-31	MANUAL, INSTRUCTION (FRENCH) (920HF:CND)	
	3-757-936-41	MANUAL, INSTRUCTION (SPANISH) (920HF:MX, CS, PL)	
	3-758-520-21	MANUAL, INSTRUCTION (ENGLISH) (771HF)	
*	3-957-411-01	INDIVIDUAL CARTON (770HF)	
*	3-957-411-11	INDIVIDUAL CARTON (771HF/920HF:US, CND)	
*	3-957-412-01	CUSHION (UPPER)	
*	3-957-413-01	CUSHION (LOWER)	
*	3-957-465-11	INDIVIDUAL CARTON (920HF:MX)	
*	3-957-465-21	INDIVIDUAL CARTON (920HF:CS)	
*	3-957-465-31	INDIVIDUAL CARTON (920HF:PL)	
*	3-957-465-41	INDIVIDUAL CARTON (920HF:PX)	
*	3-957-465-51	INDIVIDUAL CARTON (920HF:JE)	

****

****

HARDWARE LIST

****

#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3
#2	7-685-782-01	SCREW +PTT 2X5 (S)
#3	7-624-106-04	STOP RING 3.0, TYPE -E
#4	7-682-645-01	SCREW +PS 3X4
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3
#6	7-682-548-04	SCREW +P 3X8
#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#8	7-621-732-08	SCREW
#9	7-682-547-09	SCREW +P 3X6
#10	7-628-254-05	SCREW +PS 2.6X5
#11	7-624-102-04	STOP RING 1.5, TYPE E
#13	7-682-546-04	SCREW +P 3X5

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

English
94A0542-1
Printed in Japan
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9-973-500-11

Sony Corporation
Home Video Group

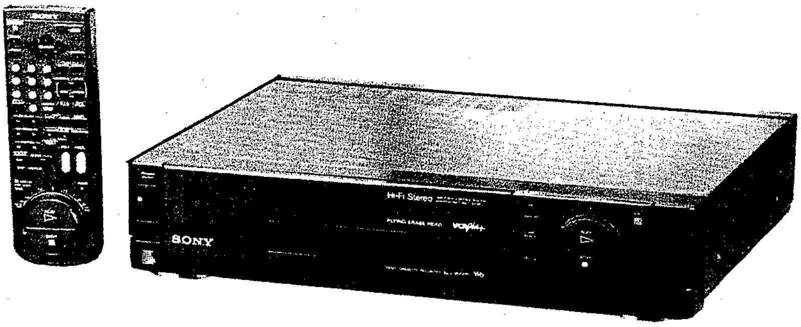
Published by CV Quality Engineering DIV.

SLV-750HF/751HF/900HF

RMT-V129/V130

SERVICE MANUAL

US Model
Canadian Model
SLV-750HF/751HF/900HF
Chile Model
Mexican Model
PX Model
SLV-900HF



- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT II for MECANICAL ADJUSTMENS. (9-972-816-11)**

VHS Hi-Fi

SPECIFICATIONS

System

Format	VHS NTSC standard
Video Recording System	Rotary two-head helical scanning FM system
Video Signal	NTSC color, EIA standards
Tape Speed	SP: 33.35 mm/s (1 3/8 inches/s) EP: 11.11 mm/s (7/16 inches/s) LP: 16.67 mm/s (11/16 inches/s) Playback only
Maximum recording/ playback time	9 hrs. in EP mode (with T-180 tape)
Fast-forward and rewind time	Approx. 4 min. 30 sec (with T-120 tape)
High-speed rewind time	Approx. 3 min. (with T-120 tape)

Tuner Section

Channel Coverage	VHF channels 2 to 13 UHF channels 14 to 69 CATV channel A-8 to A-1, A to W, W+1 to W+84
Antenna	75-ohm antenna terminal for VHF/UHF

Inputs and Outputs

LINE IN 1 and 2	VIDEO IN (phono jack) (1 each) Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO IN (phono jack) (2 each) Input level: –7.5 dBs (0 dBs = 0.775 Vrms) Input impedance: more than 47 kilohms
LINE OUT	VIDEO OUT (phono jack) (1) Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO OUT (phono jack) (2) Standard output: –7.5 dBs at load impedance 47 kilohms Output impedance: less than 10 kilohms
CONTROL S IN	Mini jack (1)

Timer Section

Clock	Quartz locked
Time Indication	12-hour cycle
Timer Setting	Only for recording 8 program in one month at max.
Power back-up	Built-in self-charging capacitor Back-up duration: Up to three hours at one time

– Continued on next page –

VIDEO CASSETTE RECORDER

SONY®

MICROFILM

General

Power requirements	120V AC, 60Hz (750HF/751HF/900HF : US, CND, MX) 110-240V AC, 50/60Hz (900HF : CHL, PX)
Power consumption	25 W (max.)
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	–20°C to 60°C (–4°F to 140°F)
Dimensions	430 x 90 x 372 mm (w/h/d) (17 x 3 5/8 x 14 3/4 inches)
Weight	5.2 kg (11 lb 7oz.)

Remote Commander

Remote control system	Infrared control
Power requirements	3 V DC, 2 size AA batteries (IEC designation R6)

Accessories Supplied

Remote Commander	(1)
Size AA (R6) batteries	(2)
75-ohm coaxial cable with F-type connectors	(1)
External antenna connector	(1)
AC power cord	(1)
Audio/video connecting cable (3 phono to 3 phono)	(1)
Cable Mouse (Cable Box Controller)	(1)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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SERVICE NOTE

1. RETURNING PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP CONDITION

1) Remove the bottom panel.
2) Turn the worm gear Ⓐ of the cam motor, located at lower of the MD, to the arrow direction Ⓑ by finger.

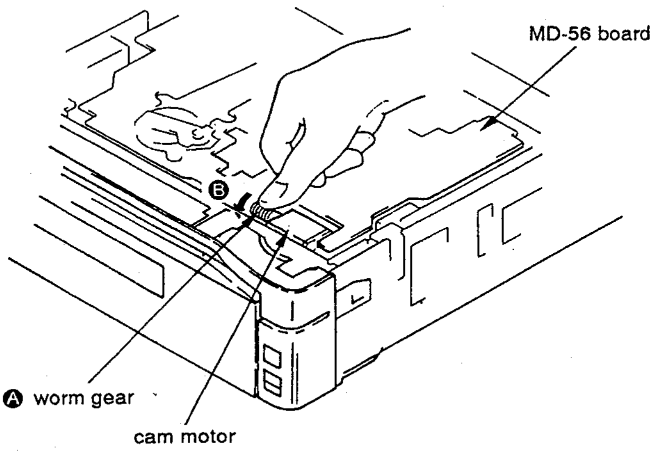

MD-56 board
Ⓑ
Ⓐ worm gear
cam motor

Fig.1.

2. WINDING TAPE TO CASSETTE HALF

Turn the fly wheel Ⓐ of the capstan motor to the arrow direction Ⓑ by finger, then the cassette tape will be wound to the cassette half.

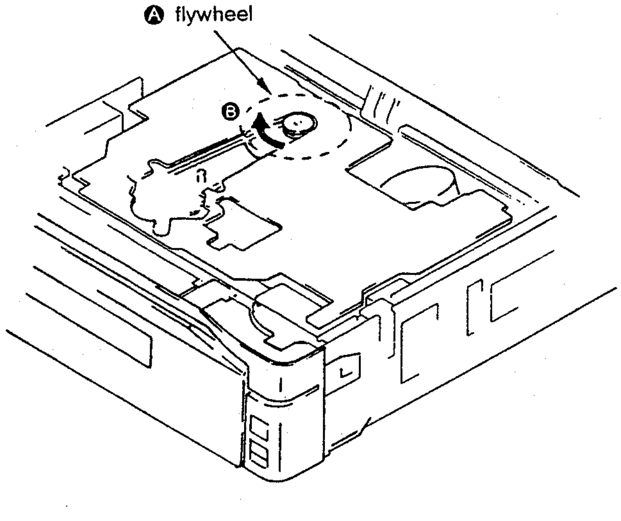


Fig. 2.

3. TAKING OUT CASSETTE WHEN UNIT IS DEFECTIVE WITH CASSETTE IN

1) Remove the upper case.
2) Turn the worm gear Ⓐ of the FL cassette compartment motor to the arrow direction Ⓑ by finger.

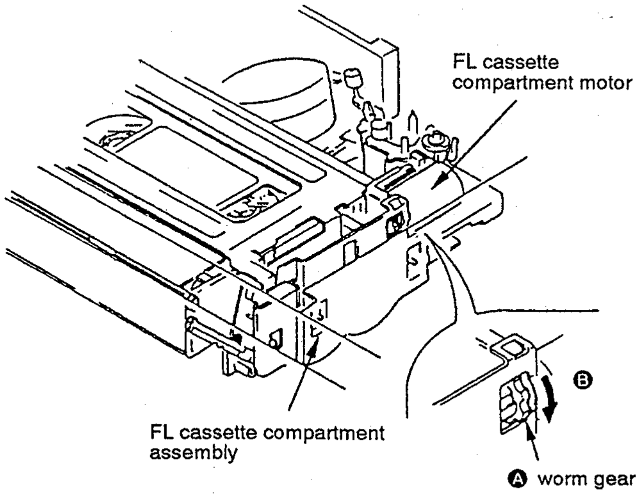

FL cassette compartment motor
FL cassette compartment assembly
Ⓑ
Ⓐ worm gear

Fig.3.

Note: When performing 1. to 3., be careful not to clog and damage the cassette tape.

4. UPPER DRUM REPLACEMENT

4-1. Removal of Upper Drum

1) Remove the screw ❶ (+P3 × 6) and take out the grounding shaft ❷. (See Fig.4.)
2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows (12 points).
3) Remove two screws ❸ (PSW3×8) and take out the rotary upper drum in the arrow direction Ⓐ. (See Fig. 5.)
   If it is difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check whether the solders have been removed or not again.

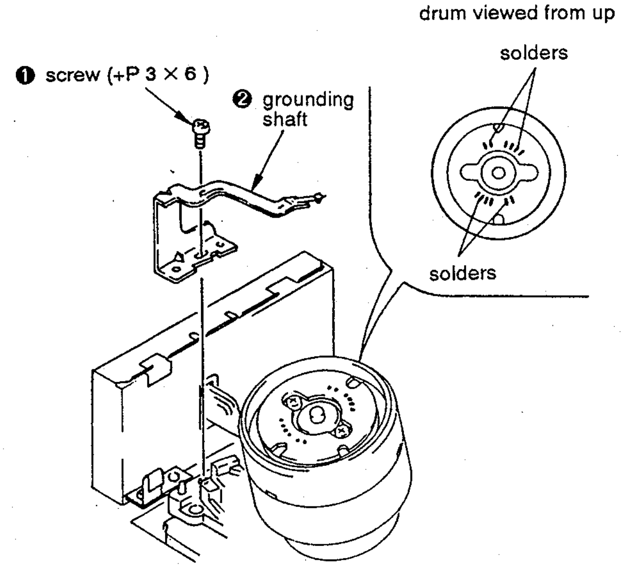

drum viewed from up
solders
❶ screw (+P 3 × 6)
❷ grounding shaft
solders

Fig. 4.

4-2. Mounting Upper Drum

1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
2) Mount the rotaly upper drum board by aligning marked ➡ with marked ⇛ of rotary transformer board (lower drum) so that the screw holes of both upper and lower drums match. (See Fig.5.)
3) If it is difficult, mount the upper drum by shaking it gradually.
   Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.
4) Tighten two screws ❸ (PSW3×8). (See Fig. 5.)
   Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.
5) Solder 12 points on the board of the rotary upper drum.
6) Fix the grounding shaft ❷ using the screw ❶ (+P3 × 6) so thet the protrusion of grounding shaft end contacts the center of the drum shaft.
   Note: When attaching the grounding shaft ❷, be careful not to apply force to the spring section of it.

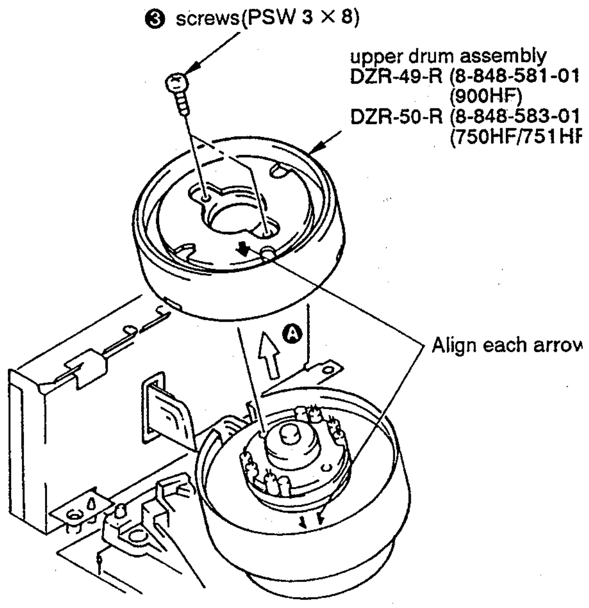

❸ screws(PSW 3 × 8)
upper drum assembly
DZR-49-R (8-848-581-01
(900HF)
DZR-50-R (8-848-583-01
(750HF/751H
Ⓐ
Align each arro

Fig. 5.

SECTION 1
GENERAL

This section is extracted from SLV-900HF instruction manual.

Precautions

Safety

- Operate the unit only on 120 V AC, 60 Hz.
- If anything falls into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purposes of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if you do not intend to use it for an extended period of time. To disconnect the cord, pull it out by the plug, never by the cord.

Installation

- Allow adequate air circulation to prevent internal heat buildup.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not install the unit in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the unit and cassettes away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Do not place heavy objects on the unit.

Operation

- When the unit is not in use, turn the power off to conserve energy and to extend its life.
- Remove and store video cassettes after recording or playback.

Cleaning

- Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution.
- Do not use any type of solvent, such as alcohol or benzine.

Introduction

How to Use This Manual

This manual is divided into five chapters.
The chapters and their contents are as follows:

Preliminaries (page 2)
Preparation (page 6)
Basic Operations (page 29)
Advanced Operations (page 48)
Additional Information (page 60)

If you are using your VCR for the first time, start from the section **"Hookups and Getting Started"** (page 6). This section explains how to hookup, set up, and operate your VCR so that you can start enjoying it right away.

For information about the VCR's basic operations, such as Playback (page 29), Recording TV Programs (page 34), or Timer Recording (page 37), see **Basic Operations.**

If you are already familiar with the basic operations, see **Advanced Operations.**

If you have any problems in operating the VCR, refer to **Troubleshooting.** If your VCR is in need of repair, contact your nearest Sony Service Center facility.

Conventions of this manual

This manual explains operations using the VCR Remote Commander. However, the buttons on the VCR with the same name or mark as those on the Remote Commander function exactly the same as those on the Remote Commander.

When you are reading through the manual, remember:

- Buttons and switches are shown in uppercase letters.
  Example: Press ► PLAY.
- Numbers in the illustrations correspond to numbers in the text.
- ← indicates signal flow.
- Notes and cautions are enclosed in boxes.

Unpacking

Check that you have received the following accessories:

- Remote Commander (1)
- Size AA (R6) batteries (2)
- External antenna connector (1)
- 75-ohm coaxial cable with F-type connectors (1)
- AC power cord (1)
- Audio/video connecting cable (3 phono to 3 phono) (1)
- Cable Mouse (Cable Box Controller) (1)

Overview

Editing

- **Flying erase head**
  Allows clean, concise editing with less noise.
- **Input connectors on the front panel**
  Allows easy connection to a video camera recorder.
- **Insert Editing**
  Allows easy superimposition of pictures and/or sound onto a prerecorded cassette.
- **CONTROL S INPUT jack**
  Allows remote control of this VCR by other Sony video equipment with a CONTROL S OUTPUT jack.

Functions

- **VCR Plus+™ system**
  Allows you to quickly and easily preset up to eight TV programs.
- **Cable box control**
  Allows your VCR to control channel selection on most cable boxes.
- **APC (Adaptive Picture Control) function**
  Automatically optimizes recording and playback performance by adjusting the video circuitry for each tape that you use.
- **Auto tracking function**
  Automatically adjusts the tracking condition for optimum picture quality.
- **Timer recordings of eight programs in a month**
  Recording of up to eight TV programs can be preset up to one month in advance.
- **DUAL MODE SHUTTLE ring**
  Allows quick access to the desired scene and playback in various speeds in forward and reverse directions.
- **Index function**
  The beginning of a desired scene can be located easily with the index search function.
- **Multi-brand TV control Remote Commander**
  The Remote Commander can control SONY and other manufacturers' TV sets.
- **Auto head cleaner**
  Cleans the video heads each time a cassette is inserted or ejected.

On-screen display

- **ON SCREEN HELP message**
  The VCR gives a message on screen with a beep tone to warn that you have attempted an incorrect operation.
- **DISPLAY**
  Tape counter, cassette speed, operation mode, and remaining cassette length can be displayed on the TV screen.
- **TIMER SET/CHECK display**
  Timer recording settings can be set and checked by referring to the TV screen.
- **LANGUAGE (Canadian versions only)**
  You can preset your VCR to display screen information in either English or French.

High-quality picture

- **High-quality picture**
  Your Sony VCR provides sharp, finely detailed pictures through High Quality (HQ) picture technology. Your VCR incorporates VHS high-quality picture technology and is compatible with any VCR bearing the VHS mark.

VCR Plus+ and PlusCode are trademarks of Gemstar Development Corp.

Hookups and Getting Started

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up, set up, and operate your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many different ways in which your TV can be hooked up. As a result, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to complete your VCR's connections.

If you ...	Use	Refer to ...
Have Audio/Video Inputs on your TV.	Hookup 1 first, then proceed.	Page 7
Have a cable box.	Hookup 2. TV signal → Cable Box → VCR	Page 8
Have cable, but don't have a cable box.	Hookup 3. TV signal → VCR	Page 10
Have a cable box that cannot be controlled by the VCR's cable box control feature.	Hookup 3 or 4, (or contact your cable company. They may be able to supply a compatible cable box.) TV signal → Cable Box → VCR	Page 11 or 12
Have an antenna, not cable TV.	Hookup 5. TV signal → VCR	Page 14

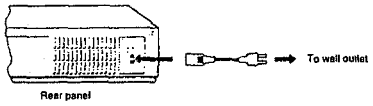
After you've completed the connections, follow the instructions for setup, including VCR Plus+ setup. (During setup, if you need more details of the procedures described, page numbers are provided where you can find complete, step-by-step instructions.)

After you've completed the setup, you're ready to use your VCR. Follow the instructions provided in "To Watch the TV," "To Watch the VCR," and "To Record A Program" for your specific hookup.
(Again, if you need step-by-step instructions, page numbers are provided where you can find this information.)

Caution
Connections between the VCR VHF/UHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in the instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

Before making the connections, check the following points:

- Turn off the power to the VCR and TV.
- Do not connect the AC power cords until all of the connections are completed.



- Make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, consult your nearest Sony dealer or qualified technician.

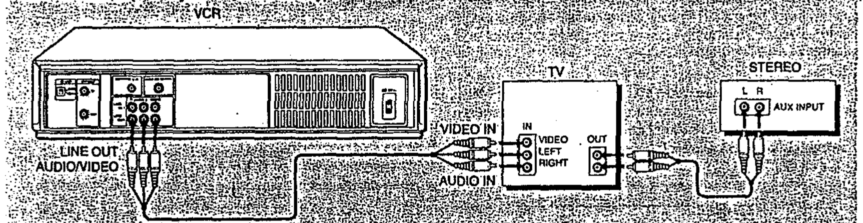
Hookup 1

Audio/Video (A/V) Hookup

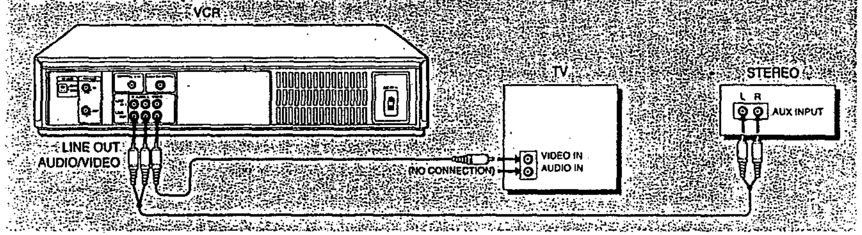
If your TV has audio/video (A/V) input jacks, you will get better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system.
If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookup.

If you intend to use the VCR for playback only, you're finished after you've made these connections. If you want to record off-air or off your cable TV system, please do the A/V hookup on this page first, then proceed to the following pages for antenna or cable hookup.

1A Use hookup 1A if your TV is a stereo type.



1B Use hookup 1B if your TV does not have stereo jacks.

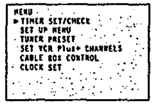


After you've hooked up your TV using the A/V connections, use the following procedure to set up and use the VCR with your TV.

A/V Setup & Operation

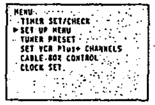
Set AUTO ANT SEL to OFF.

Press MENU.



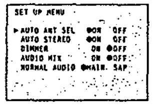
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select SET UP MENU.



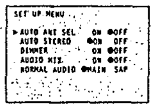
```
MENU
 TIMER SET/CHECK
▶SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select AUTO ANT SEL.



```
SET UP MENU

▶AUTO ANT SEL   ●ON   OFF
 AUTO STEREO    ●ON   OFF
 DIMMER          ON  ●OFF
 AUDIO MIX       ON  ●OFF
 NORMAL AUDIO  ●MAIN  SAP
```

Set to OFF.



```
SET UP MENU

▶AUTO ANT SEL    ON  ●OFF
 AUTO STEREO    ●ON   OFF
 DIMMER          ON  ●OFF
 AUDIO MIX       ON  ●OFF
 NORMAL AUDIO  ●MAIN  SAP
```

Details are on page 27.

Hookup 2 - Using VCR Cable Box Control

Cable Hookup

Recommended Use:
This hookup is recommended for most cable systems. It allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. You should use this hookup if you have a cable box, especially if your cable company "scrambles" all, or most, channels.

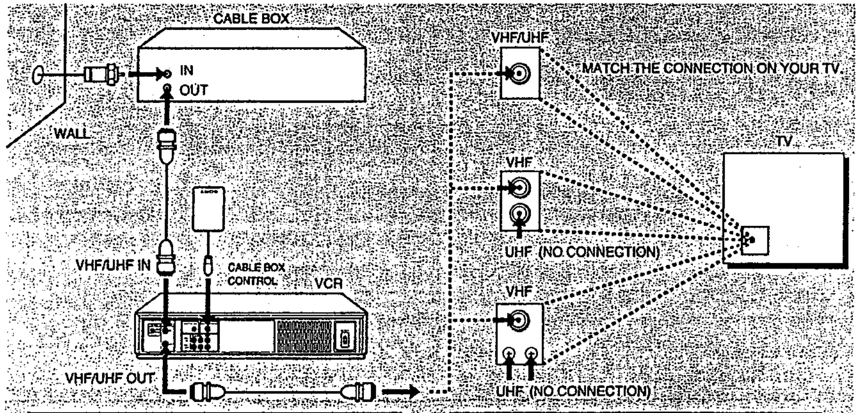
Background
This VCR can record most unscrambled cable channels. Some cable systems "scramble" specific channels, usually premium, or pay-per-view channels. In order to record these "scrambled" channels you should use this hookup.

This hookup simplifies recording channels from the cable box, by using the VCR's cable box control feature to change channels on the cable box. The cable box control feature allows the VCR to change channels on most cable boxes that are capable of IR remote control.

A list of compatible cable boxes is on page 26. If, after checking your setup, you are sure that the VCR will not control your cable box, contact your cable company. They may be able to supply a compatible cable box.

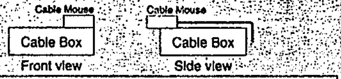
If your cable company cannot supply a compatible cable box, and your cable system only "scrambles" a few channels, use Hookup 3.

If your cable company cannot supply a compatible cable box, and your cable system only "scrambles" all, or most, channels, you must use Hookup 4.



Cable Mouse Hookup

Position the CABLE MOUSE on the cable box as shown below. Make sure that the front of the CABLE MOUSE projects out in front of the cable box. Remove the protective film from the double-sided tape to stick the CABLE MOUSE to the cable box.



For best results, position the cable box away from the VCR.

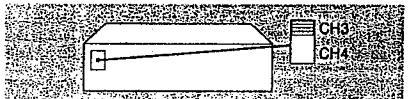
What You Can and Can't Do With This Hookup

What You Can Do
- Record any channel by selecting the channel on the cable box from your VCR.

What You Can't Do
- Record with the cable box turned off.
- Record one channel while watching another channel.

VCR Setup

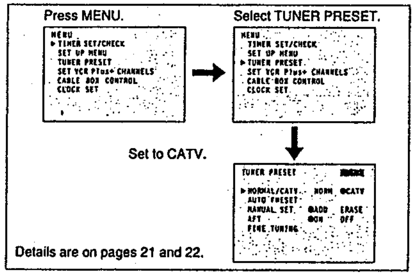
1 Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area. If both are used, pick either channel.
Details are on page 60.

2 Switch on your cable box.

3 Set NORMAL/CATV to CATV.



Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select TUNER PRESET.

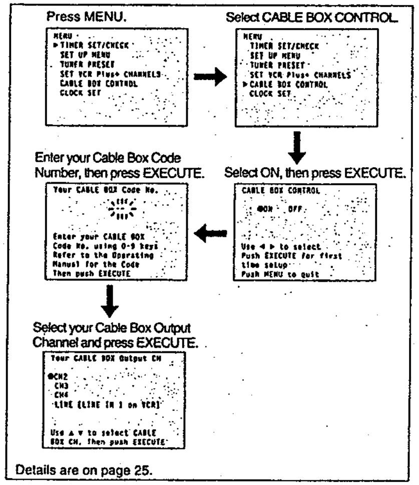
```
MENU
 TIMER SET/CHECK
 SET UP MENU
▶TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Set to CATV.

```
TUNER PRESET
▶NORMAL/CATV    NORM  ●CATV
 AUTO PRESET
 MANUAL SET     ●ADD  ERASE
 AFT            ●ON   OFF
 FINE TUNING
```

Details are on pages 21 and 22.

4 Set the CABLE BOX CONTROL to ON.



Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select CABLE BOX CONTROL.

```
MENU
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
▶CABLE BOX CONTROL
 CLOCK SET
```

Select ON, then press EXECUTE.

```
CABLE BOX CONTROL

 ●ON   OFF

Use ◀ ▶ to select
Push EXECUTE for first
time setup
Push MENU to quit
```

Enter your Cable Box Code Number, then press EXECUTE.

```
Your CABLE BOX Code No.

Enter your CABLE BOX
Code No. using 0-9 keys
Refer to the Operating
Manual for the Code
Then push EXECUTE
```

Select your Cable Box Output Channel and press EXECUTE.

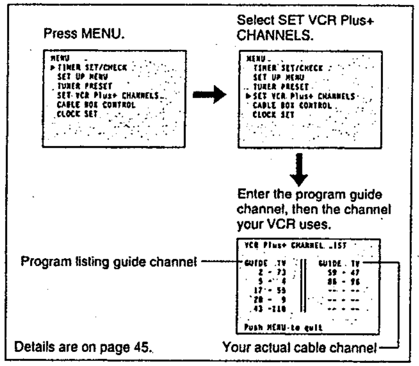
```
Your CABLE BOX Output CH

●CH2
 CH3
 CH4
 LINE (LINE IN 1 on VCR)

Use ▲ ▼ to select CABLE
BOX CH, then push EXECUTE
```

Details are on page 25.

VCR Plus+ Channel Setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 44.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:



Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select SET VCR Plus+ CHANNELS.

```
MENU
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Enter the program guide channel, then the channel your VCR uses.

```
VCR Plus+ CHANNEL LIST

GUIDE  TV   ||  GUIDE  TV
  2 - 73    ||   59 - 47
  5 -  4    ||   86 - 96
 17 - 55    ||   -- - --
 28 -  9    ||   -- - --
 43 -110    ||   -- - --

Push MENU to quit
```

Details are on page 45.

To Watch the TV

1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Switch on your cable box.
3 Tune the TV to the cable box output channel (usually 2, 3, or 4).
4 Select the channel that you want to watch with your cable box.

To Watch the VCR

1 Tune the TV to CH 3 or CH 4, (or to A/V input if you made A/V connections.)
2 Insert a cassette and press ► PLAY.

Details are on page 30.

To Record A Program

1 Switch on the cable box.
2 Press VCR Plus+ on the Remote Commander.
3 Enter the program's PlusCode number.
4 Press ONCE, DAILY, or WEEKLY on the Remote Commander.
5 Insert a blank cassette.
6 Press TIMER REC on the Remote Commander.
7 Leave the cable box on.

Details are on page 46.

Hookup 3 - No Cable Box or Incompatible Cable Box, Few "Scrambled" Channels

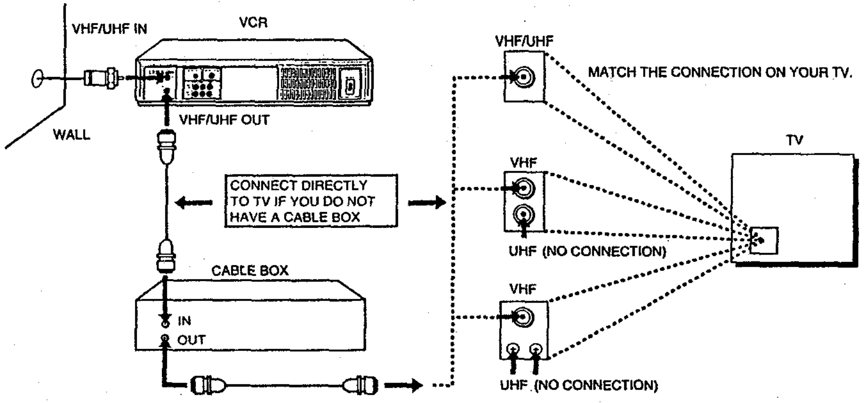
Cable Hookup

Recommended Use:
Use this hookup if you do not have a cable box.

Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system only "scrambles" a few channels.

Background
This VCR can record most unscrambled cable channels. Some cable systems "scramble" specific channels, usually premium or pay-per-view channels. You will not be able to record "scrambled" channels with this hookup. In order to record "scrambled" channels you should use Hookup 2.

The "Cable Mouse" is not used in this hookup.


VHF/UHF IN
VCR
WALL
VHF/UHF OUT
CONNECT DIRECTLY TO TV IF YOU DO NOT HAVE A CABLE BOX
CABLE BOX
IN
OUT
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
TV
VHF
UHF (NO CONNECTION)
VHF
UHF (NO CONNECTION)

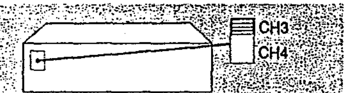
What You Can and Can't Do With This Hookup

What You Can Do
- Record unscrambled channel directly, without using a cable box.

What You Can't Do
- Record scrambled channels that require a cable box.
- Use the VCR's cable box control feature.

VCR Setup

1 **Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.**
If you made A/V connections, skip this step.



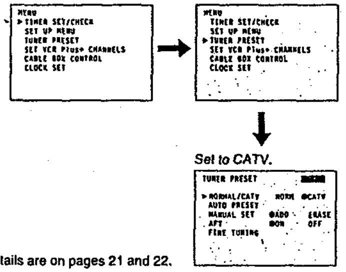
Set to whichever channel is not used in your area. If both are used, pick either channel.
Details are on page 60.

2 **Set CABLE BOX CONTROL to OFF (this is the factory setting) using the on-screen MENU.**

3 **Set NORMAL/CATV to CATV.**

Press MENU.

Select TUNER PRESET.


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
▶TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
▶NORMAL/CATV NORM ●CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

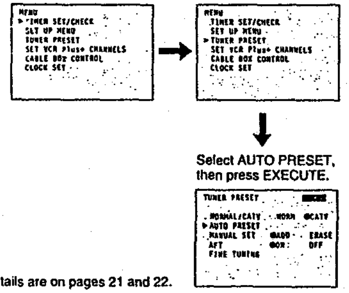
Set to CATV.

Details are on pages 21 and 22.

4 **Preprogram the channels into the VCR.**

Press MENU.

Select TUNER PRESET.


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
▶TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
TUNER PRESET
NORMAL/CATV NORM ●CATV
▶AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Select AUTO PRESET, then press EXECUTE.

Details are on pages 21 and 22.

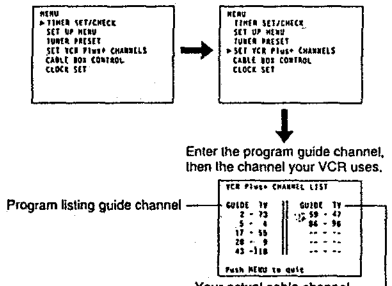
VCR Plus+ Channel Setup

1 **Find the VCR Plus+ Channel Listing in your program guide.** For details, see page 44.

2 **If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:**

Press MENU.

Select SET VCR Plus+ CHANNELS.


MENU
▶TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
▶SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
CLOCK SET
VCR Plus+ CHANNEL LIST
GUIDE TV
2 - 73
5 - 8
17 - 55
28 - 9
43 - 118
GUIDE TV
59 - 47
86 - 96
Push MENU to quit
Program listing guide channel
Your actual cable channel

Enter the program guide channel, then the channel your VCR uses.

Details are on page 45.

To Watch TV
1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Select the channel with your cable box (if you have one), or directly tune with your TV (if you don't).

To Watch the VCR
1a If you didn't use the A/V input:
- Turn on the cable box.
- Select CH 3 or CH 4 on the **cable box** (whichever you set on the back of the VCR).
- Select the output channel of the cable box (usually 2, 3 or 4) on your TV.

1b If you made the A/V connections on page 7:
Set your TV to the A/V input.
2 Insert a cassette and press ▶ PLAY.
Details are on page 30.

To Record A Program
1 Press VCR Plus+ on the Remote Commander.
2 Enter the program's PlusCode number.
3 Press ONCE, DAILY, or WEEKLY on the Remote Commander.
4 Insert a blank cassette.
5 Press TIMER REC on the Remote Commander.
Details are on page 46.

Hookup 4 - Incompatible Cable Box, Many "Scrambled" Channels

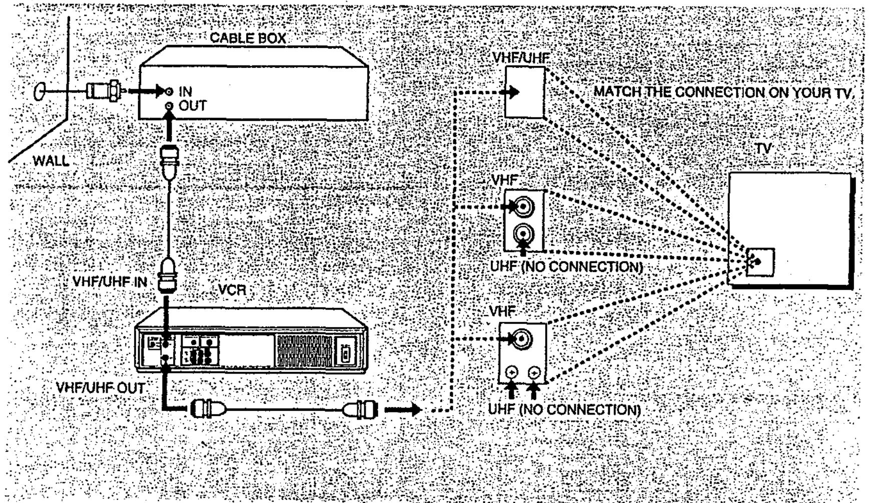
Cable Hookup

Recommended Use:
Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system "scrambles" all, or most, channels.

Background
This VCR can record most unscrambled cable channels. Some cable systems "scramble" specific channels, usually premium, or pay-per-view channels.

If your cable company cannot supply a cable box that is compatible with the VCR's cable box control, and it is necessary to use a cable box because all, or most, channels are "scrambled", you must use this hookup. It will be necessary to set the cable box channel manually for each recording.

If your cable company cannot supply a compatible cable box, and your cable system only "scrambles" a few channels, use Hookup 3.


CABLE BOX
IN
OUT
WALL
VHF/UHF IN
VCR
VHF/UHF OUT
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
TV
VHF
UHF (NO CONNECTION)
VHF
UHF (NO CONNECTION)

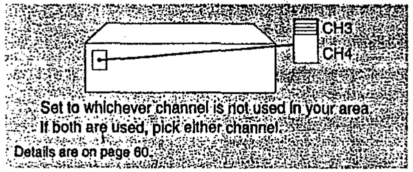
What You Can and Can't Do With This Hookup

What You Can Do
- Record any channel by selecting the channel on the cable box.

What You Can't Do
- Record with the cable box turned off.
- Record by selecting channels directly from the VCR.
- Record one channel while watching another channel.
- Use the VCR's cable box control feature.

VCR Setup

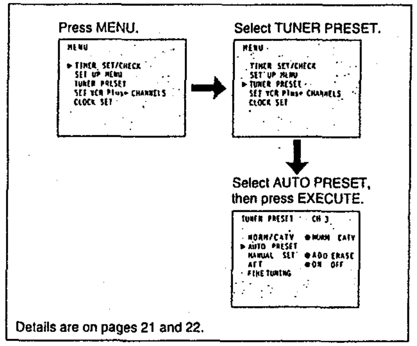
1 **Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.**
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area.
If both are used, pick either channel.
Details are on page 60.

2 **Switch on your cable box.**

3 **Preprogram the channels into the VCR.**


MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
▶ TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
TUNER PRESET CH 3
NORM/CATV ●NORM CATV
▶ AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

Press MENU.

Select TUNER PRESET.

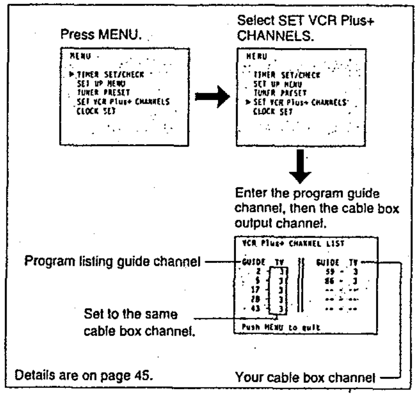
Select AUTO PRESET, then press EXECUTE.

Details are on pages 21 and 22.

VCR Plus+ Channel Setup

1 **Find the VCR Plus+ Channel Listing in your program guide.** For details, see page 44.

2 **For all channels that you want to record, set each channel to the channel that your cable box uses for its output (usually 2, 3, or 4), as follows:**


MENU
▶ TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
▶ SET VCR Plus+ CHANNELS
CLOCK SET
VCR Plus+ CHANNEL LIST
GUIDE TV
2 - 3
5 - 3
17 - 3
28 - 3
43 - 3
GUIDE TV
59 - 3
86 - 3
-- - --
-- - --
-- - --
Push MENU to quit
Program listing guide channel
Set to the same cable box channel.
Your cable box channel

Press MENU.

Select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the cable box output channel.

Details are on page 45.

To Watch the TV
1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Switch on your cable box.
3 Tune the TV to the cable box output channel (usually 2, 3, or 4).
4 Select the channel that you want to watch with your cable box.

To Watch the VCR
1 Tune the TV to CH 3 or CH 4, (or to A/V input if you made A/V connections.)
2 Insert a cassette and press ▶ PLAY.

Details are on page 30.

To Record A Program
1 Switch on the cable box.
2 Select the channel you wish to record on the cable box.
3 Press VCR Plus+ on the Remote Commander.
4 Enter the program's PlusCode number.
5 Press ONCE, DAILY, or WEEKLY on the Remote Commander.
6 Insert a blank cassette.
7 Press TIMER REC on the Remote Commander.
8 Leave the cable box on.

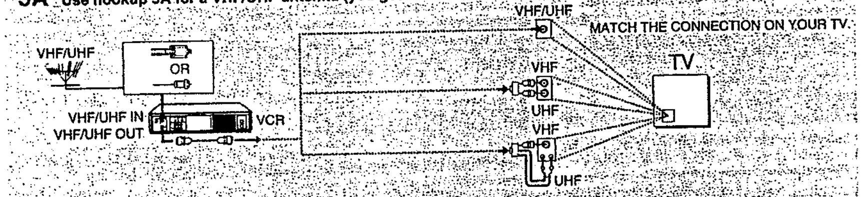
Details are on page 46.

Hookup 5

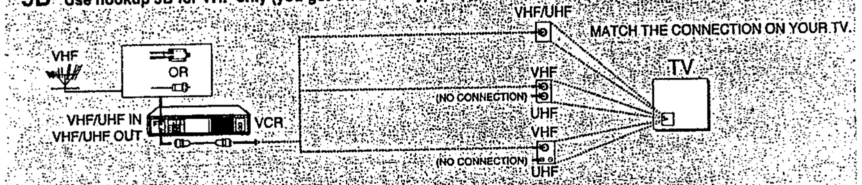
Antenna Hookup

Make the following connections if you're using an antenna (not cable TV).

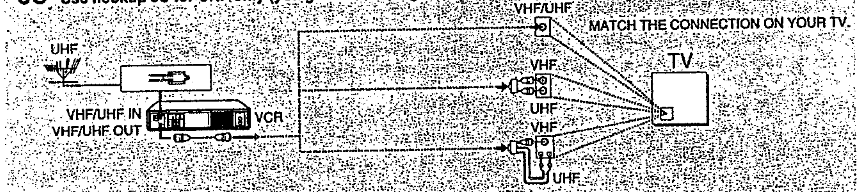
5A **Use hookup 5A for a VHF/UHF antenna (you get Ch 2-13 and Ch 14 or higher).**


VHF/UHF
OR
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
VHF
UHF
VHF
UHF
TV

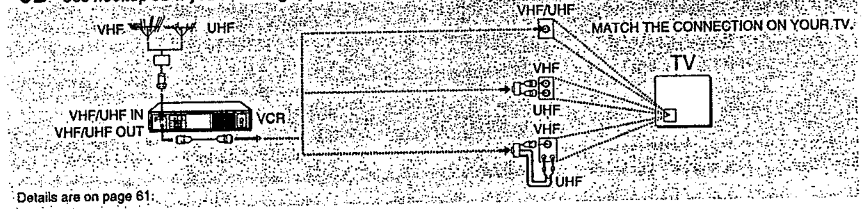
5B **Use hookup 5B for VHF only (you get Ch 2-13 only).**


VHF
OR
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
VHF
(NO CONNECTION)
UHF
VHF
(NO CONNECTION)
UHF
TV

5C **Use hookup 5C for UHF only (you get Ch 14 or higher).**


UHF
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
VHF
UHF
VHF
UHF
TV

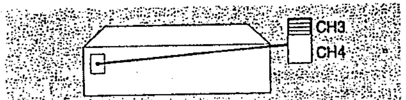
5D **Use hookup 5D if you are using separate VHF and UHF antennas.**


VHF
UHF
VHF/UHF IN
VHF/UHF OUT
VCR
VHF/UHF
MATCH THE CONNECTION ON YOUR TV.
VHF
UHF
VHF
UHF
TV

Details are on page 61.

VCR Setup

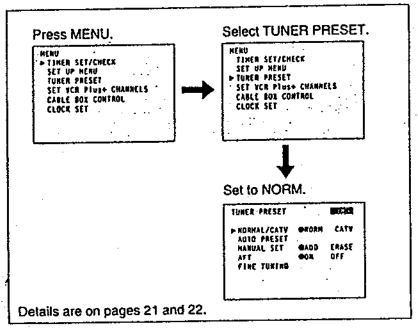
1 **Set the RF UNIT on the VCR's rear panel to CH 3 or CH 4.**
If you made A/V connections, skip this step.



Set to whichever channel is not used in your area. If both are used, pick either channel.

Details are on page 60.

2 **Set NORMAL/CATV to NORM.**



Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select TUNER PRESET.

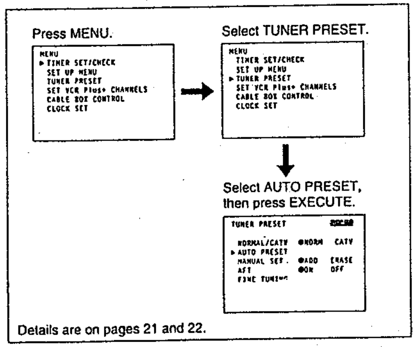
```
MENU
 TIMER SET/CHECK
 SET UP MENU
▶TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Set to NORM.

```
TUNER PRESET

▶NORMAL/CATV   ●NORM  CATV
 AUTO PRESET
 MANUAL SET    ●ADD   ERASE
 AFT           ●ON    OFF
 FINE TUNING
```

Details are on pages 21 and 22.

3 **Preprogram the channels into the VCR.**



Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select TUNER PRESET.

```
MENU
 TIMER SET/CHECK
 SET UP MENU
▶TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select AUTO PRESET, then press EXECUTE.

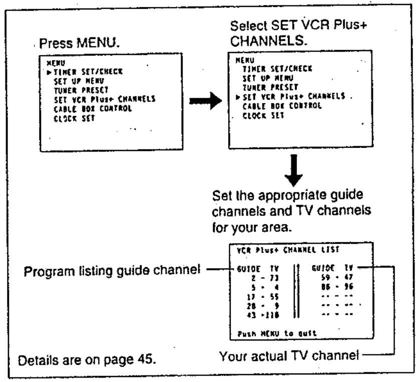
```
TUNER PRESET

 NORMAL/CATV   ●NORM  CATV
▶AUTO PRESET
 MANUAL SET    ●ADD   ERASE
 AFT           ●ON    OFF
 FINE TUNING
```

Details are on pages 21 and 22.

VCR Plus+ Channel Setup

1 **Find the VCR Plus+ Channel Listing in your program guide.** For details, see page 44.

2 **If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:**



Press MENU.

```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Select SET VCR Plus+ CHANNELS.

```
MENU
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

Set the appropriate guide channels and TV channels for your area.

```
VCR Plus+ CHANNEL LIST

GUIDE  TV  ||  GUIDE  TV
   2 - 73  ||    59 - 47
   5 -  4  ||    86 - 96
  17 - 55  ||    -- - --
  28 -  9  ||    -- - --
  43 -118  ||    -- - --

Push MENU to quit
```

Program listing guide channel

Your actual TV channel

Details are on page 45.

To Watch the TV

1 Turn your VCR off, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.

2 Tune the TV normally.

To Watch the VCR

1 Tune the TV to CH 3 or CH 4, whichever you set on the back of the VCR. (If you made the A/V connections on page 7, set your TV to the A/V input instead.)

2 Insert a cassette and press ▶ PLAY. If there's no picture on your TV, press the VCR's TV/VTR button until the VTR indicator comes on in the VCR's display window.

Details are on page 30.

To Record A Program

1 Press VCR Plus+ on the Remote Commander.

2 Enter the program's PlusCode number.

3 Press ONCE, DAILY, or WEEKLY on the Remote Commander.

4 Insert a blank casette.

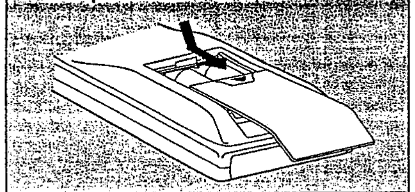
5 Press TIMER REC on the Remote Commander.

Details are on page 46.

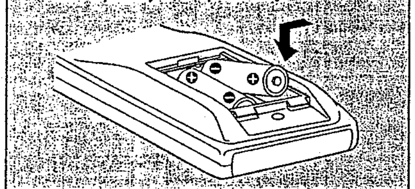
Preparing the Remote Commander

Inserting Batteries

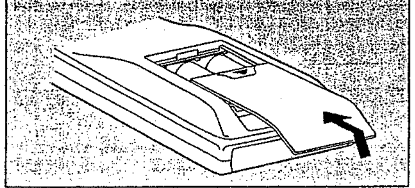
1 Slide open and remove the cover.



2 Insert two size AA (IEC designation R6) batteries with the polarity lined up correctly.



3 Replace and close the cover.



Operating the VCR with the Remote Commander

Set the TV/VTR remote control selector at the top of the Remote Commander to "VTR."

If you are using a Sony TV

You can use the Remote Commander of this VCR to operate the TV. When doing this, slide the TV/VTR remote control selector to "TV." Buttons on the Remote Commander with a dot (•) on or beside them can be used to operate your TV. To operate the VCR, return the TV/VTR remote control selector to "VTR.".

How to Use the Remote Commander

When you operate the VCR using the Remote Commander, point it at the remote sensor located on the VCR. For the location of the remote sensor, see "Identifying the Parts and Controls" on page 62.

When using the Remote Commander to change channels on a cable box, with the VCR's Cable box control feature turned on, point the Remote Commander at the VCR, not the cable box. For best results, separate the VCR and cable box.

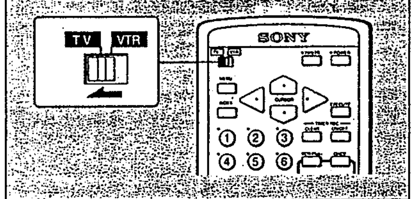
Notes on the handling of batteries

- With normal use, the batteries should last for approximately six months.
- If you do not use the Remote Commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery together with an old one.
- Do not use different types of batteries.

Setting the Remote Commander to Control other Manufacturers' TV Sets

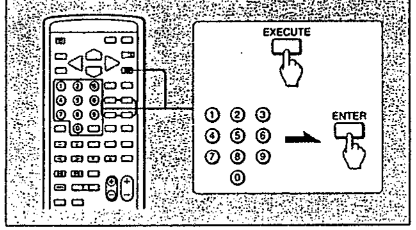
The following steps show you how to use your Remote Commander to set the appropriate manufacturers' code number for a non-Sony TV.

1 Set the TV/VTR remote control selector to TV.



2 While pressing the EXECUTE button, press the manufacturer's code number and the ENTER button.

You can now use the POWER, VOL +/–, CHANNEL +/– and the TV/VTR buttons on your Remote Commander to operate the TV.



NOTES:

- The TV/VTR button may not function, depending on the manufacturer. If this problem occurs, use your TV's remote control unit.
- If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.
- If you enter a new code number, the code number previously entered will be erased.
- If you release the EXECUTE button before pressing the ENTER button, the setting will be cancelled.
- Some manufacturers may use a different remote control system from the one programmed to work with your VCR. If this is the case, and you are unable to operate the TV with your Remote Commander, use the TV's remote control unit instead.
- When you replace the batteries in the Remote Commander, the code number automatically resets to 1 (SONY). Reset the appropriate code number, if necessary.

Manufacturers and their Code Numbers

Your Remote Commander is preprogrammed for use with a number of different TV sets. If your TV is listed in the table below, set the appropriate manufacturer's code prior to using the Remote Commander.

Manufacturer	Code Number	Manufacturer	Code Number
SONY	1	Philco	3, 4
Akai	4	Philips	8
AOC	4	Pioneer	15
Centurion	12	Portland	3
Coronado	3	Quasar	6
Curtis-Mathes	12	Radio Shack	5
Daytron	12	RCA	4, 10
Fisher	11	Sampo	12
General Electric	6, 10	Sanyo	11
Hitachi	2, 3	Scott	12
J.C.Penney	4, 12	Sears	7,10,11
JVC	9	Sylvania	8, 12
KMC	3	Teknika	3, 8
Magnavox	3, 8,12	Toshiba	7
Marantz	4, 13	Wards	3, 4, 12
MGA/Mitsubishi	4, 12,13	Yorx	12
NEC	4, 12	Zenith	14
Panasonic	6		

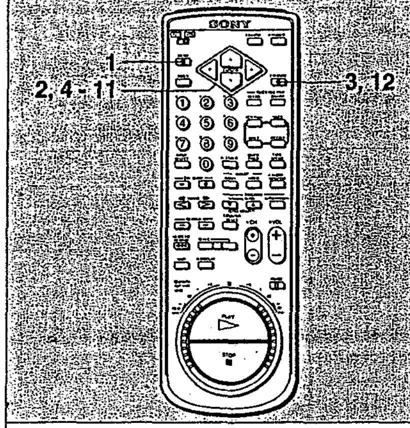
Setting the Time and Date

You can set the VCR time and date on the TV screen using the Remote Commander.

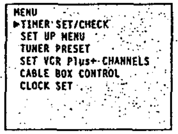
Example of Time and Date Setting

Example: To set to 3:32 pm, July 4, 1993

Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.

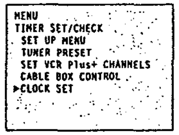


1 Press MENU.
The main MENU appears.



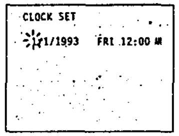
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.



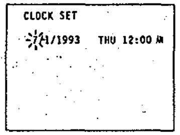
```
MENU
TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
▶CLOCK SET
```

3 Press EXECUTE.
"1/1 1993 FRI 12:00 AM" is displayed. The leftmost 1, in the "month" position, flashes.



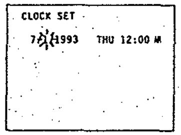
```
CLOCK SET
1/1/1993    FRI 12:00 AM
```

4 Press ▲ or ▼ until 7 appears in the month position.



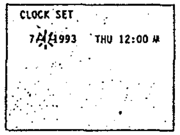
```
CLOCK SET
7/1/1993    THU 12:00 AM
```

5 Press ▶ to make the next number in the "day" position flash.



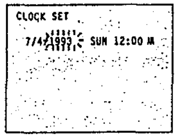
```
CLOCK SET
7/1/1993    THU 12:00 AM
```

6 Press ▲ or ▼ until "4" appears in the day position.
The day of the week is set automatically.



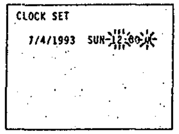
```
CLOCK SET
7/4/1993    THU 12:00 AM
```

7 Press ▶ to make the "year" position flash and press ▲ to change the year.



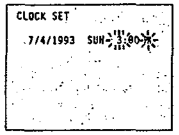
```
CLOCK SET
 7/4/1993  SUN 12:00 AM
```

8 Press ▶ to make the "time" position flash.



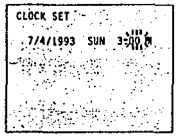
```
CLOCK SET
 7/4/1993  SUN 12:00 AM
```

9 Press ▲ or ▼ until "3:00 PM" appears.



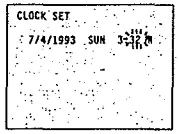
```
CLOCK SET
 7/4/1993  SUN 3:00 PM
```

10 Press ▶ to make the "minutes" position flash.



```
CLOCK SET
 7/4/1993  SUN  3:00 PM
```

11 Press ▲ or ▼ until "32" appears in the minutes position.



```
CLOCK SET
 7/4/1993  SUN  3:32 PM
```

12 Press EXECUTE at the same time that you hear the time signal.
Pressing EXECUTE will set the clock to 3:32 pm 00 seconds.

NOTES:
- Do not set the time and date during timer-activated recording, timer recording standby or quick-timer recording.
- When the time and date clock is displayed, the clock keeps running as long as no changes are made. The seconds are not reset to 00 when you return to the original screen.

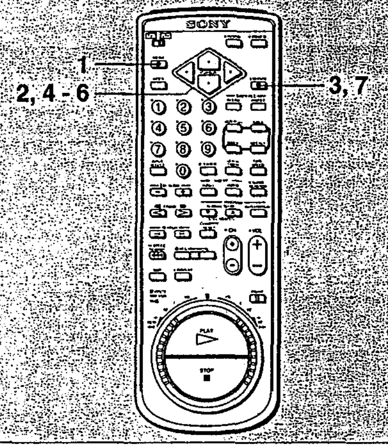
Presetting the Active Channels

This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and CATV channels 1 to 125. These channels can be preset using the Remote Commander and the TUNER PRESET display. First, we recommend that you preset the active channels in your area using the automatic preset mode. Then, if there are any unwanted channels, disable them manually. If you have already decided which channels you wish to preset on the VCR, set them directly using the channel number buttons.

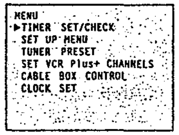
Before presetting channels, check the following points:
- Turn on the VCR and the TV.
- If you have connected the TV and the VCR using the VHF/UHF OUT on the VCR only, make sure that the TV is set to the correct channel (CH 3 or CH 4) for the VCR.
- Press TV/VTR to display the VTR indicator in the display window on the VCR.
- Press INPUT SELECT so that the channel number appears in the display window on the VCR.
- It is not necessary to use the TUNER PRESET function if the CABLE BOX CONTROL is set to "ON." If you want to use the TUNER PRESET function, make sure the CABLE BOX CONTROL is set to "OFF."

Presetting All Receivable Channels Automatically

Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.

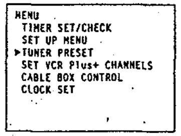


1 Press MENU.
The main MENU appears.



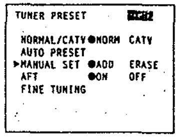
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 Press ▲ or ▼ to move the cursor (▶) to TUNER PRESET.



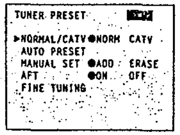
```
MENU
 TIMER SET/CHECK
 SET UP MENU
▶TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

3 Press EXECUTE.
The TUNER PRESET menu is displayed.



```
TUNER PRESET

 NORMAL/CATV●NORM  CATV
 AUTO PRESET
▶MANUAL SET ●ADD   ERASE
 AFT        ●ON    OFF
 FINE TUNING
```

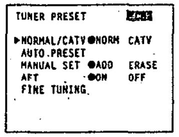
4 Press ▲ or ▼ to move the cursor to NORMAL/CATV.



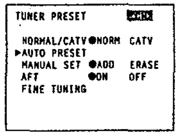
```
TUNER PRESET

▶NORMAL/CATV●NORM  CATV
 AUTO PRESET
 MANUAL SET ●ADD   ERASE
 AFT        ●ON    OFF
 FINE TUNING
```

Presetting the Active Channels

5 **Press ◀ or ▶ to select NORM or CATV.**
NORM presets the VHF and UHF channels; CATV presets your cable TV channels. The lowest channel number, 2 for NORM and 1 for CATV, will appear on the screen.


TUNER PRESET
▶NORMAL/CATV ●NORM CATV
AUTO.PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

6 **Press ▲ or ▼ to move the cursor to AUTO PRESET.**


TUNER PRESET
NORMAL/CATV ●NORM CATV
▶AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING

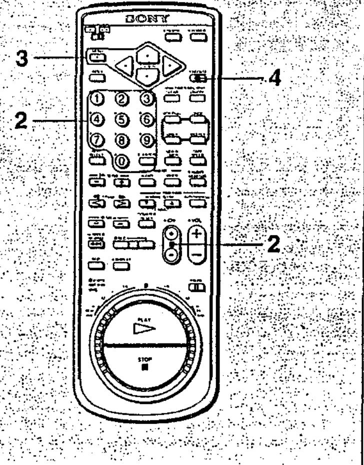
7 **Press EXECUTE**
Receivable channels are preset in numerical sequence. When no more channels can be found, the presetting stops and the picture of the lowest numbered channel is displayed on the tape counter. The message "Please wait" is flashing while presetting on the TV screen.

NOTE:
The VCR automatically exits from the TUNER PRESET menu if you don't proceed for more than one minute.

Presetting Desired Channels or Disabling Unwanted Channels

After automatic presetting, you can disable and/or add channels.

Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.


SONY
3
2
4
2
PLAY
STOP

1 **Follow steps 1 to 3 in "Presetting All Receivable Channels Automatically" on page 21.**

2 **To disable channels, press CH +/– to select the channel.**
To add channels, press channel number buttons (0 to 9) and ENTER key to select the channel.

3 **To disable channels, press ◀ or ▶ to select ERASE.**
To add channels, press ◀ or ▶ to select ADD.

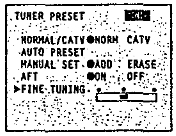
4 **Press EXECUTE.**
When you press CH +/–, the disabled channels are removed and the added channels are displayed.

Fine-tuning

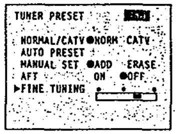
Normally, the Auto Fine Tuning (AFT) setting on the menu is set to "ON," and the AFT function fine-tunes the picture. If the picture of a channel is not acceptable, fine-tune it manually.

1 **Display the TUNER PRESET menu referring to steps 1 to 3 in "Presetting All Receivable Channels Automatically" (page 21).**

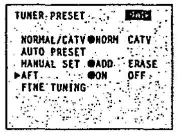
2 **Press ▲ or ▼ to move the cursor to FINE TUNING.**
The fine tuning indicator is displayed.


TUNER PRESET
NORMAL/CATV ●NORM CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
▶FINE TUNING

3 **Press ◀ or ▶ to get a clearer picture.**
The AFT ON/OFF automatically switches to "OFF."


TUNER PRESET
NORMAL/CATV ●NORM CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ON ●OFF
▶FINE TUNING

4 **Press ▲ to move the cursor to AFT and select "ON" if you cannot get a better picture. Then, press EXECUTE.**


TUNER PRESET
NORMAL/CATV ●NORM CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
▶AFT ●ON OFF
FINE TUNING

The FINE TUNING indicator

The FINE TUNING indicator shows the operable fine-tuning range and stops at the optimal point of reception. When a broadcast is received in an optimal condition, the indicator may not be at the center position.

Cable TV Channel Assignment

Cable TV systems use letters or numerals to designate the channels. To tune-in a CATV channel, refer to the chart below which shows the CATV channel, numbers on this VCR and the corresponding CATV channel. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	1	2	...	13	14	15	16	17	18
Corresponding CATV channel	A-8	2	...	13	A	B	C	D	E

19	20	21	22	23	24	25	26	27	28	29	30	31	32
F	G	H	I	J	K	L	M	N	O	P	Q	R	S

33	34	35	36	37	...	94	95	96	97	98	99
T	U	V	W	W+1	...	W+58	A-5	A-4	A-3	A-2	A-1

100	...	125
W+59	...	W+84

This VCR is designed to correspond to the standard cable system. However, the cable TV services may vary from area to area. Your local cable TV company may adopt either the HRC$^{1)}$ or IRC$^{2)}$ cable system. This VCR is capable of receiving either of these cable systems in the best condition.

1) **HRC (Harmonic Related Carriers)**
All channels except for 5 and 6 are 1250 kHz lower than the standard cable system. Channels 5 and 6 are 750 kHz higher than the standard cable system.

2) **IRC (Incremental Related Carriers)**
All channels except for 5 and 6 are the same as the standard cable system. Channels 5 and 6 are 2000 kHz higher than the standard cable system.

FINE TUNING Indicator for receiving HRC or IRC cable systems

Even when the signals are received in optimal condition, the FINE TUNING indicator will not stay at the center position for channels higher or lower that the standard cable system due to the difference in the frequency.

NOTE:
Many cable TV systems use scrambled or encoded signals for certain channels, usually premium or pay-per-view channels.
A cable box is necessary to receive scrambled channels.

Activating the Cable Box Control Function

Your VCR includes a Cable Box Control feature which allows the VCR to control channel selection on most cable boxes.

The use of compatible cable box brand is shown on the following page.

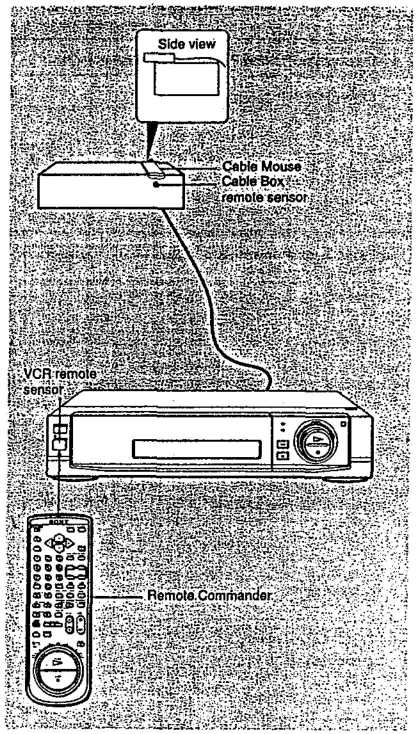
The CABLE BOX CONTROL must be set to "ON," and the code number and the output channel must be set to match your cable box before you can use it. Detail for connecting your cable box to the VCR to control the cable box with the Remote Commander, make connections using Hookup 2 on page 8.

When CABLE BOX CONTROL is set to "ON," the VCR will control the cable box channel for timer recording. In addition, you can use the VCR's Remote Commander to change channels on the cable box whenever the cable box and the VCR are turned on.

Note on setting the cable box and Cable Mouse

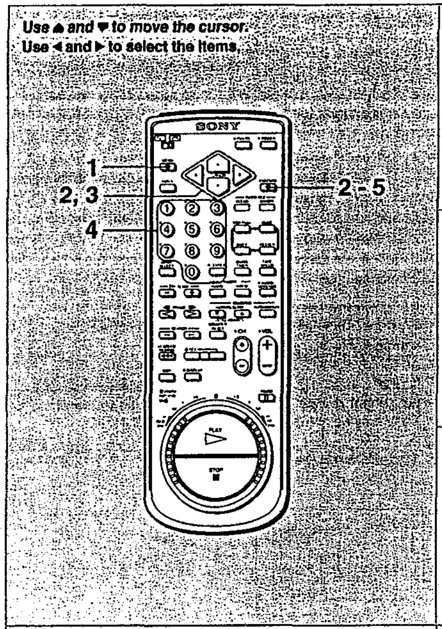
Make sure that the Cable Mouse is positioned near to and above the sensor on the cable box so that the signal from the Cable Mouse is received correctly.

The cable box should not be too close to the VCR.

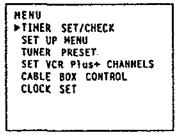


Setting the Cable Box Control

To use the cable box control function, enter the cable box code number and select the cable box output channel as explained below.

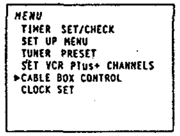

Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.
SONY
1
2, 3
4
2 - 5

1 Press MENU.
The main MENU appears.



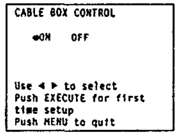
```
MENU
▶TIMER  SET/CHECK
 SET UP MENU
 TUNER  PRESET
 SET VCR Plus+ CHANNELS
 CABLE  BOX  CONTROL
 CLOCK  SET
```

2 Press ▲ or ▼ to move the cursor (▶) to CABLE BOX CONTROL, then press EXECUTE.



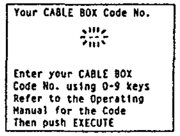
```
MENU
 TIMER  SET/CHECK
 SET UP MENU
 TUNER  PRESET
 SET VCR Plus+ CHANNELS
▶CABLE BOX CONTROL
 CLOCK SET
```

3 Press ◀ or ▶ to select "ON," then press EXECUTE.



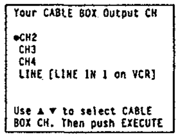
```
CABLE BOX CONTROL

   ●ON    OFF


Use ◀ ▶ to select
Push EXECUTE for first
time setup
Push MENU to quit
```

4 Enter the cable box code number under CABLE BOX Code No. as listed in the chart on page 26, then press EXECUTE.



```
Your CABLE BOX Code No.


Enter your CABLE BOX
Code No. using 0-9 keys
Refer to the Operating
Manual for the Code
Then push EXECUTE
```

5 Select the cable box output channel under CABLE BOX OUTPUT CH, then press EXECUTE.



```
Your CABLE BOX Output CH

●CH2
 CH3
 CH4
 LINE [LINE IN 1 on VCR]


Use ▲ ▼ to select CABLE
BOX CH. Then push EXECUTE
```

Activating the Cable Box Control Function

Cable box code number chart

In step 4 on page 25, enter the code number of your cable box as listed in the chart below.

Brand	IR Code No.
Hamlin	14, 15
Jerrold/ General Instrument	1, 2, 3, 4
Oak	17, 18
Panasonic	12, 13
Philips	22
Pioneer	8, 9
Regal	14,15
Regency	20
Scientific Atlanta	5, 6
Tocom	10, 11
Zenith	7

The VCR contains 42 cable box codes (1-42). If your cable box is not listed in the chart, it may be possible to control it using one of the other (1-42) codes. You may want to try other codes before calling your cable company to see if they can supply a cable box that is in the chart.

If your cable box is listed in the chart, but does not respond, first check the placement of the Cable Mouse (see page 24), and try placing the cable box and VCR away from each other (do not place the cable box directly on top of the VCR). If the cable box still does not respond, you can try other codes.

Checking the Cable Box Control Setting

Using the information provided below, check to make sure that you have made the correct Cable Box Control setting.

Note

Make sure to do the following when using a cable box.

- Tap the buttons lightly. Do not hold the buttons down.
- Position the cable box away from the VCR. Do not point the Remote Commander at the cable box. Point it at the VCR.

1 Press CH +/– on the Remote Commander. Does the channel indicator on the cable box change?

2 Press all 10 channel number buttons on the Remote Commander (0 to 9). Does the channel indicator on the cable box change?

If the answer to both 1 and 2 is "yes," you have made the correct setting.

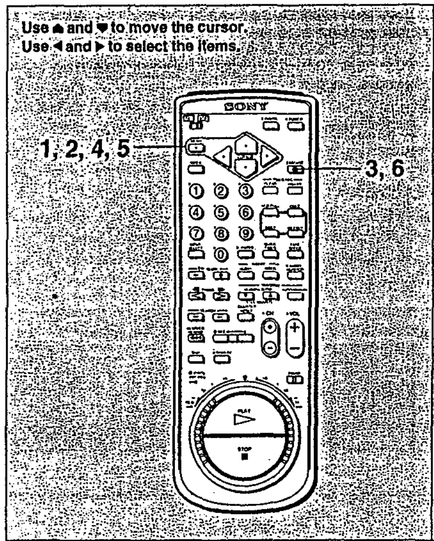
If you cannot get your VCR to control the cable box

Try the setup again making sure to use the correct code number.

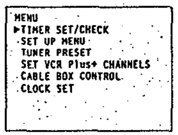
If, after checking your setup, you are sure that the VCR will not control your cable box, contact your cable company. They may be able to supply a compatible cable box.

Using the SET UP MENU

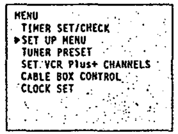
Before using your VCR, make your preferred audio and video display choices from the SET UP MENU.


Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select the items.

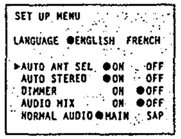
1 **Press MENU.**
The main MENU appears.


```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

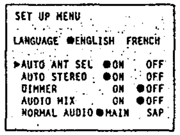
2 **Press ▲ or ▼ to move the cursor (▶) to SET UP MENU.**


```
MENU
 TIMER SET/CHECK
▶SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

3 **Press EXECUTE.**
The SET UP MENU appears.


```
SET UP MENU

LANGUAGE  ●ENGLISH  FRENCH

▶AUTO ANT SEL  ●ON   OFF
 AUTO STEREO   ●ON   OFF
 DIMMER         ON  ●OFF
 AUDIO MIX      ON  ●OFF
 NORMAL AUDIO ●MAIN  SAP
```

4 **Press ▲ or ▼ to move the cursor to the desired menu choice.**
(For Menu Choices, see the next page.)


```
SET UP MENU

LANGUAGE  ●ENGLISH  FRENCH

▶AUTO ANT SEL  ●ON   OFF
 AUTO STEREO   ●ON   OFF
 DIMMER         ON  ●OFF
 AUDIO MIX      ON  ●OFF
 NORMAL AUDIO ●MAIN  SAP
```

5 **Press ◀ or ▶ to move the dot (•) to the desired setting.**

6 **Press EXECUTE to return to the original screen.**
The settings are stored. The displayed page is stored unless the power plug is disconnected.

Using the SET UP MENU

Menu Choices

LANGUAGE (Canadian versions only)

You can preset your VCR to display screen information in either English or French.

AUTO ANT SEL (Automatic Antenna Selector)

- If your TV is connected only to VHF/UHF OUT on the VCR, set AUTO SET SEL to "ON."

When playing back a cassette, the picture is automatically displayed on the screen simply by selecting the channel for the VCR on the TV. To watch TV programs selected on the TV, press TV/VTR to turn off the VTR indicator in the display window.

- If your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR, set to "OFF."

When playing back a cassette, select the input for the VCR on the TV.

To watch TV programs selected on the TV, select the tuner input.

AUTO STEREO

If a stereo program's reception is poor, set to "OFF." The program is recorded in monaural but sound quality may improve. For details, see page 36.

DIMMER

Select "ON" to make the display window dimmer and select "OFF" to make the display window brighter.

AUDIO MIX

To listen to sound recorded on both the hi-fi video track and the normal audio track of the audio tape, set to "ON." For details, see page 33.

NORMAL AUDIO

When there is a SAP (Second Audio Program) broadcast, select SAP to record the SAP sound on the normal audio track. For details, see page 36.

NOTE:
The VCR automatically exits from the main MENU and SET UP MENU if you don' t proceed for more than one minute.

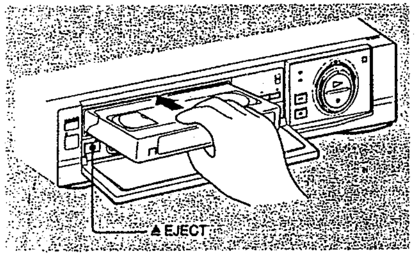
Playback

This section shows you how to play back a video cassette.

Inserting a Video Cassette

1 **Insert a video cassette as shown below.**

2 **Gently press the center of the front side of the cassette until the mechanism draws it into the compartment.**
When the cassette has been loaded, the cassette indicator (▭) lights in the display window and the VCR turns on automatically.



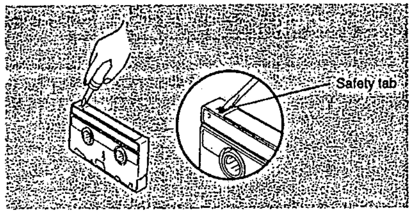
NOTE:
If you insert a cassette without a safety tab, playback starts automatically (auto playback function).

Ejecting the cassette

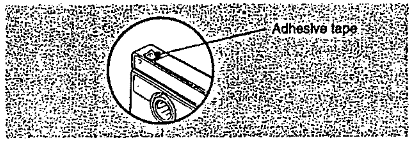
Press ▲ EJECT on the VCR. You can eject the cassette when the power is off. When you press ▲ EJECT, the power is turned on. After ejecting the cassette, the power automatically shuts off.

Protecting your cassette against accidental erasure

Cassettes have a safety tab to protect against accidental recording. Break off the safety tab with a screwdriver or other tool. If the safety tab is removed, the cassette will be ejected when you try to record on it.



To record on a cassette with the safety tab broken off, simply cover the tab hole with adhesive tape.



Maximum recording time of a cassette

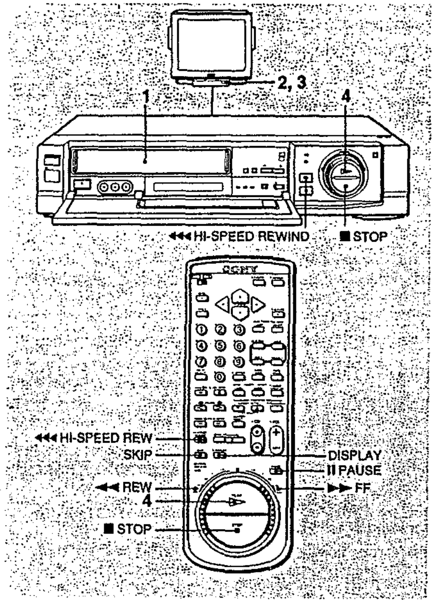
Recording in either the SP or EP mode is possible with this VCR. When recording, select the desired recording mode (SP or EP) using TAPE SPEED on the Remote Commander. During playback, the VCR automatically detects the recording format, and then plays back the cassette in the appropriate mode. A cassette recorded in the EP mode runs three times as slowly as a cassette recorded in the SP mode. Refer to the chart below for the recording/playback times available.

Cassette tape	Recording / Playback time	
	SP mode	EP mode
T-180	3 hrs.	9 hrs.
T-160	2 hrs. 40 min.	8 hrs.
T-120	2 hrs.	6 hrs.
T-60	1 hr.	3 hrs.
T-30	30 min.	1 hr. 30 min.

Cassettes recorded in LP mode

Playback of cassettes recorded in LP mode is also possible with this VCR. However, playback in modes other than normal forward speed is not guaranteed. This VCR is not designed to record in the LP mode.

Playback


1
2, 3
4
◂◂◂ HI-SPEED REWIND
■ STOP
◂◂◂ HI-SPEED REW
SKIP
◂◂ REW
4
■ STOP
DISPLAY
II PAUSE
▸▸ FF

1. **Insert a cassette.**
2. **Turn on the TV.**
3. **If your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR, select the input for the VCR. If your TV is connected only to the VHF/UHF OUT on the VCR, select the channel for the VCR (CH 3 or CH 4).**
4. **Press ▶ PLAY.**

To stop playback
Press ■ STOP.

To stop playback for a moment
Press II PAUSE.
Press II PAUSE again or ▶ PLAY to resume playback.

To fast-forward the cassette at high speed during stop mode
Turn the DUAL MODE SHUTTLE ring to the right (▶▶).

To rewind the cassette during stop mode
Turn the DUAL MODE SHUTTLE ring to the left (◀◀).

To rewind the cassette at high speed
Press ◀◀◀ HI-SPEED REWIND.

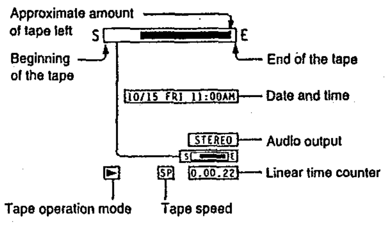
To rewind the cassette to its beginning and to play back automatically (auto playback function)
Press ▶ PLAY while depressing ◀◀◀ HI-SPEED REWIND or by using the DUAL MODE SHUTTLE ring.
You cannot use the Remote Commander for the auto playback function.

To reduce streaks and/or snow and obtain a clearer picture
Switch the PICTURE switch to NOISE REDUCTION when playing back rental or poor quality tapes.

When the cassette reaches its end
The cassette automatically rewinds to the beginning (auto rewind), and power remains on.

The Display

To delete or call up the Display on the TV screen, press DISPLAY on the Remote Commander.

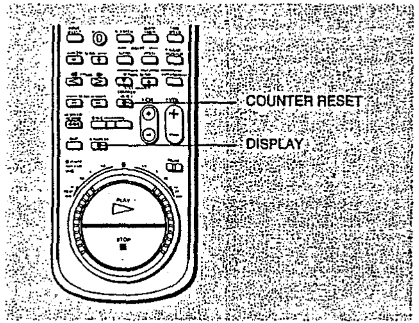

Approximate amount of tape left
S
E
Beginning of the tape
End of the tape
10/15 FRI 11:00AM
Date and time
STEREO
Audio output
SP
0.00.22
Linear time counter
Tape operation mode
Tape speed

To turn off the Display, press DISPLAY.

NOTES:
- The remaining tape length displayed is approximate. Therefore, use it only as an approximate reference.
- When you insert a cassette with a short tape length such as T-20, T-30 or a non-standard commercially available cassette, this indicator may not function correctly.
- The on-screen Display cannot be displayed on the screen during still mode, or slow motion playback.
- Audio output, tape operation mode, and tape speed are displayed when you make changes to them. They are displayed even when the Display is turned off.

Indexing Tape Contents

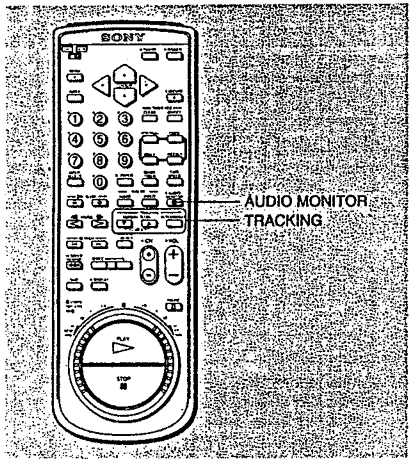
Before recording or playback, press COUNTER RESET on the Remote Commander to reset the counter to zero. By noting the setting, you can find that point later by referring to the counter. Use the label on the cassette to list the programs and their counter readings.


COUNTER RESET
DISPLAY

NOTES ON COUNTER READING:
- After a cassette is ejected, the counter reading is retained. When a cassette is reinserted the counter returns to "0H00M00S."
- The counter will not advance on portions of the tape on which no recording has been made.

Playing Back Externally-Recorded Tapes

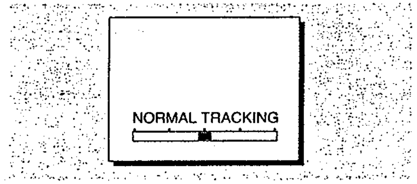
When playing back a cassette recorded on another VCR, the tracking condition is automatically adjusted. You can also adjust the tracking condition and the sharpness manually according to the following instructions.



Manual tracking adjustment

When the playback picture has streaks and/or snow during normal playback, adjust the picture manually with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲.

Press either ▲ or ▼ for the best possible picture. The tracking meter will appear on the TV screen and the AUTO TRACKING indicator will turn off.



Automatic tracking adjustment

The tracking condition is automatically adjusted on this VCR. The AUTO TRACKING indicator flashes while the VCR is searching for the optimal tracking condition and lights when optimum playback picture is obtained. The automatic tracking control is activated in the following conditions:

- When the cassette is inserted for the first time
- When the recording mode on the playback cassette is switched from SP to EP and back again
- When the picture is distorted by scratches on the cassette
- When the AUTO TRACKING indicator is turned on by pressing TRACKING AUTO/MANUAL after the picture is adjusted manually

NOTES:
- Auto tracking adjustment is not possible for cassettes recorded in LP mode.
- Auto tracking adjustment may be impossible and the tracking indicator may not appear on the TV screen when the recording condition of the cassette is poor.
- During auto tracking adjustment, streaks or noise may occur.

Selecting the Monitor Sound

You can play back cassettes on which stereo sound or bilingual programs are recorded.
Press AUDIO MONITOR to select the desired sound mode.
Each press of the button changes the display on the TV screen.

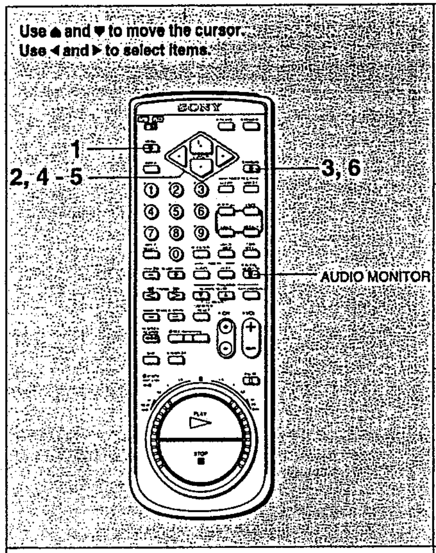
NOTE:
When you play back a cassette recorded in monaural, the sound is heard in monaural regardless of the setting of the AUDIO MONITOR.

Sound Mode

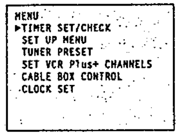
Stereo Indicator	On-screen Display	Sound heard	
		Stereo tape	Bilingual tape
Lights up	STEREO	Stereo	Left and right channels
Lights up	L_{CH}	Left channel	Left channel
Lights up	R_{CH}	Right channel	Right channel
No indication	None	Monaural on normal audio track	Sound on normal audio track (SAP)

Listening to Mixed Hi-Fi and Normal Track Sound

You can hear sound recorded on the hi-fi video track and the normal audio track simultaneously. This allows you to listen to an audio-inserted cassette.

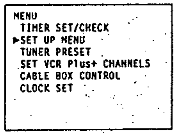


1 **Press MENU.**
The main MENU appears.



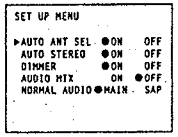
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 **Press ▲ or ▼ to move the cursor (▶) to SET UP MENU.**



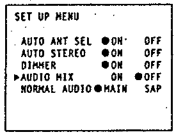
```
MENU
 TIMER SET/CHECK
▶SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

3 **Press EXECUTE.**
The SET UP MENU appears.



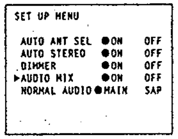
```
SET UP MENU

▶AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
 AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

4 **Press ▲ or ▼ to move the cursor to AUDIO MIX.**



```
SET UP MENU

 AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
▶AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

5 **Press ◄ or ► to move the dot (•) to "ON."**



```
SET UP MENU

 AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
▶AUDIO MIX     ●ON    OFF
 NORMAL AUDIO ●MAIN   SAP
```

6 **Press EXECUTE to return to the original screen.**

NOTES:
- When you set AUDIO MIX to "ON," the AUDIO MONITOR button does not function.
- Reset to "OFF" after listening to the sound in audio mix mode.

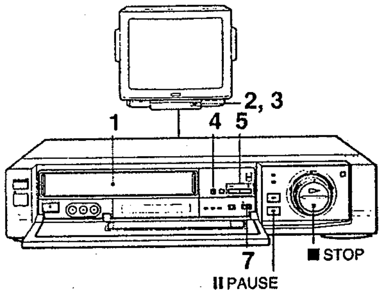
Recording TV Programs

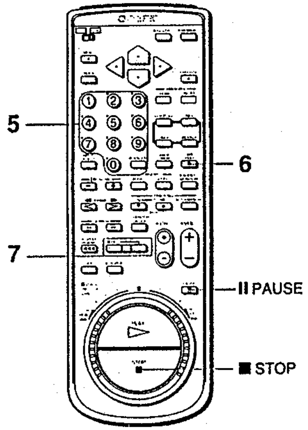
Before you begin, check the following points:

- Make sure that the connections have been made correctly (see pages 6 to 15).
- Check the input mode indicator in the display window of the VCR.

CAUTION:
Television programs, films, video cassettes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization for the cable television transmission and/or program owner.

Recording TV Programs





1 **Insert a cassette.**
The VCR turns on automatically (auto power on).

2 **Turn on the TV.**
If you are using a cable box, turn it on.

3 **If your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR, select the VCR input on the TV.**

4 **If your TV is connected only to VHF/UHF OUT, set the TV to the correct channel (CH 3 or CH 4), then press TV/VTR so that the VTR indicator lights up.**
Skip this step if your VCR is connected to both the VHF/UHF OUT and LINE OUT.

5 **Select the channel to be recorded with CHANNEL +/– or the channel number buttons and press ENTER.**

6 **Select SP or EP with TAPE SPEED (SP/EP).**
To select the best recording tape speed, see "Maximum Recording Time of a Cassette" on page 29.

7 **Press the two ● REC buttons on the Remote Commander at the same time, or the ● REC button on the VCR.**
The REC indicator lights up on the VCR.

To stop recording

Press ■ STOP.

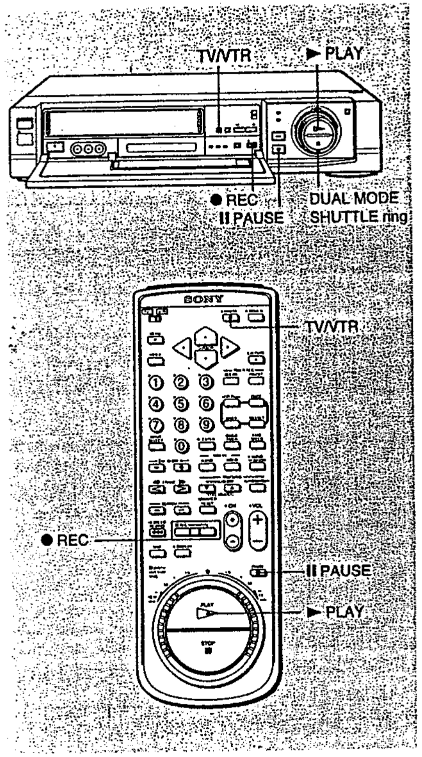
To pause the cassette

Press II PAUSE. To resume recording, press II PAUSE. When the recording pause mode lasts for approximately 5 minutes, the VCR enters the stop mode.

When the cassette reaches its end

The cassette rewinds to the beginning and the power remains on.

Pausing



Technique 1

You can stop recording an unwanted scene and resume recording smoothly.

1 **Press II PAUSE when an unwanted scene appears.**
Recording will stop and the VCR enters the recording pause mode.

2 **Press II PAUSE at the desired point to release the pause mode.**
Recording resumes from the point set in step 1.

Technique 2

When an unwanted scene has already started recording, you can return the cassette to the desired point, have the VCR standby in the recording pause mode, and resume recording at the desired scene.

1 **Press II PAUSE to set the VCR to the recording pause mode.**

2 **Turn the DUAL MODE SHUTTLE ring on the VCR to the left to search for the point from which you wish to continue recording.**

3 **Release the DUAL MODE SHUTTLE ring on the VCR at the desired point.**
After an instant in still mode, the VCR automatically enters the recording pause mode.

4 **Press II PAUSE.**
Recording resumes.

Recording with the TV Off

Turn off the power of the TV or color monitor.
There will be no interference with the recording.

When using a cable box, make sure to leave the power for it set to on.

Watching One TV Program While Recording Another

1 **Press TV/VTR so that the VTR indicator light goes off.**

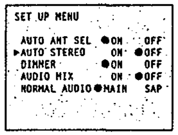
2 **Select the channel you want to watch on the TV.**

VTR Indicator	Picture on the TV Screen
Lights up	Channel selected by the VCR or the playback picture of the VCR
No indication	Channel selected by the TV

Recording Multi-Channel TV Sound (MTS)

To record a stereo broadcast:

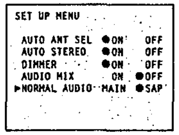
When a stereo broadcast program is received, the STEREO indicator lights up. The stereo program is automatically recorded in stereo. If a stereo program's reception is poor, set AUTO STEREO to "OFF" in the SET UP MENU. (See page 28.) The sound is heard in monaural but the noise is reduced.



```
SET UP MENU

 AUTO ANT SEL  ●ON    OFF
▶AUTO STEREO    ON   ●OFF
 DIMMER        ●ON    OFF
 AUDIO MIX      ON   ●OFF
 NORMAL AUDIO ●MAIN   SAP
```

To record SAP (Second Audio Program) broadcast:

Normally, set NORMAL AUDIO to "MAIN" in the SET UP MENU. The main sound is recorded on the normal track. To record the SAP sound on the normal audio track, set NORMAL AUDIO to "SAP" in the SET UP MENU.



```
SET UP MENU

 AUTO ANT SEL  ●ON    OFF
 AUTO STEREO   ●ON    OFF
 DIMMER        ●ON    OFF
 AUDIO MIX      ON   ●OFF
▶NORMAL AUDIO  MAIN  ●SAP
```

To monitor the SAP sound during recording, press AUDIO MONITOR to light the SAP indicator in the display window.

NOTES:
- When not recording an SAP broadcast, select "MAIN." If you select "SAP," no sound is recorded on the normal audio track.
- When the TV is connected only to the VHF/UHF OUT on the VCR, you cannot hear the program in stereo.
- In order to hear stereo playback, it is necessary to connect the L/R audio out connections of the VCR to a stereo monitor TV, or stereo audio system.

Timer Recording

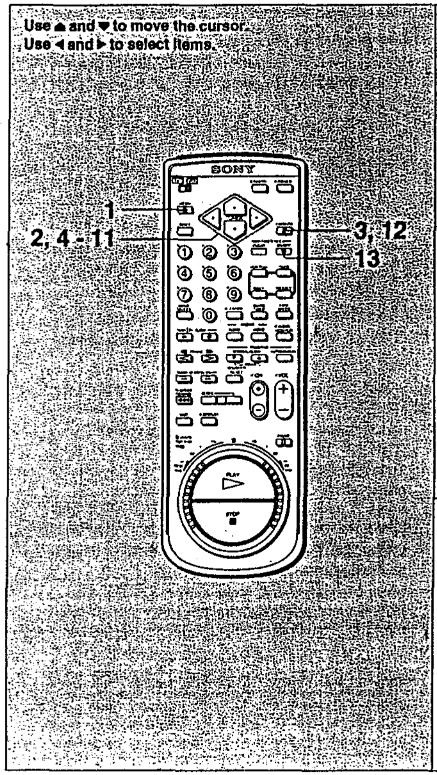
The timer recording function lets you preset your VCR to record up to eight programs within a one-month period. You'll do this procedure from the TIMER SET/CHECK display on your TV.

As a First Step

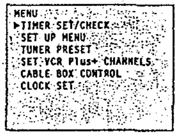
Before setting the timer, make sure that:
- The time and date clock is set correctly. (See "Setting the Time and Date" on page 19.)
- The cassette is long enough to record all the programs.
- The cassette has a safety tab in place. If you insert a cassette with no safety tab and press TIMER REC (ON/OFF), the cassette automatically ejects from the VCR.
- The VCR and TV are both turned on.
- When you use a cable box, use Hookup 2 and set the CABLE BOX CONTROL (See "Setting the Cable Box Control" on page 25). Turn the cable box on.

Setting the Timer

EXAMPLE: Here's how to record a program broadcast on channel 26 from 9:00 pm to 10:55 pm on Saturday, July 10 in EP mode:

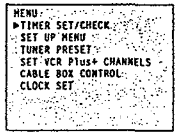


1 **Press MENU.**
The main MENU appears.



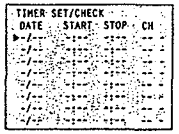
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

2 **Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.**



```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

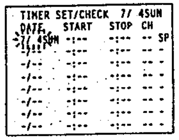
3 **Press EXECUTE.**
The TIMER SET/CHECK display appears on the screen. A short beep alerts you if the clock is not set properly. To reset the clock, refer to "Setting the Time and Date" (page 19).



```
TIMER SET/CHECK
 DATE   START  STOP  CH
▶-/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
 -/--  --:--  --:--  -- -
```

4 **Press ▶.**

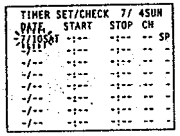
Make sure that today's date is flashing. If it isn't, reset the clock to the correct time. See "Setting the Time and Date" (page 19).



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/ 4SUN  -:--    -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

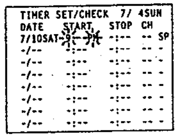
5 **Press ▲ to set the month and date to "7/10 SAT."**

The day of the week is automatically set.



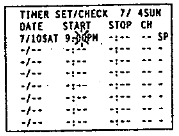
```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  -:--    -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

6 **Press ▶ to flash the hours position under "START," then ▲ or ▼ until "9:-- PM" appears.**



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  9:--PM  -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

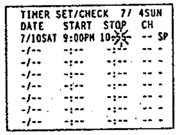
7 **Press ▶ to flash the minutes position under "START," then ▲ or ▼ until "00" appears.**



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  9:00PM  -:--  -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

8 **Press ▶.**

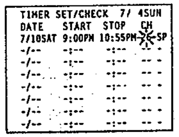
The cursor blinks in the time field under "STOP." Set the time to finish recording, referring to steps 6 and 7.



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP  CH
7/10SAT  9:00PM  10:   -- SP
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
-/--     -:--    -:--  -- -
```

9 **Press ▶ to flash the "CH" field, then press ▲ or ▼ until "26" appears.**

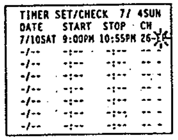
Only the channels set in the VCR will appear. You can also use the CHANNEL +/– or channel number buttons. When using a cable box, the cable box channels appear under the CH section.



```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP     CH
7/10SAT  9:00PM  10:55PM     SP
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
```

10 **Press ▶ to flash the recording speed position, then ▲ or ▼ or TAPE SPEED until "EP" appears.**

To change or correct a setting before entering it, press ◀ to return to the item you wish to change.

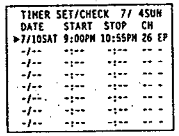


```
TIMER SET/CHECK  7/ 4SUN
DATE     START   STOP     CH
7/10SAT  9:00PM  10:55PM  26
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
-/--     -:--    -:--     -- -
```

11 **Press ▶ to store the setting.**

When all of the settings stop flashing and display a "▶" in the leftmost column, you've completed the setting.

To preset another program, move the cursor to the next line and repeat steps 4 to 11.



```
TIMER SET/CHECK  7/ 4SUN
DATE      START   STOP     CH
▶7/10SAT  9:00PM  10:55PM  26 EP
-/--      -:--    -:--     -- -
-/--      -:--    -:--     -- -
-/--      -:--    -:--     -- -
-/--      -:--    -:--     -- -
-/--      -:--    -:--     -- -
-/--      -:--    -:--     -- -
-/--      -:--    -:--     -- -
```

12 **Press EXECUTE.**

The message "Please push TIMER REC to set timer" appears on the TV screen.

13 **Press TIMER REC (ON/OFF).**

The VCR enters the timer recording standby mode and the TIMER REC (recording) indicator lights up.

When using a cable box, make sure to leave it on.

To stop timer recording:

To stop timer recording while a program is being recorded, press TIMER REC (ON/OFF).

NOTES:

- To change or correct the setting before completing it, press ◀ to return to the item you wish to change.
- To record video sources from LINE IN 1 or 2 jacks, press INPUT SELECT in step 4 to 11 to move the screen cursor to LINE 1 or 2 in the "CH" position. This cursor returns to channel number on the third press.
- When CABLE BOX CONTROL is set to "ON," timer recording cannot be done through LINE IN.
- If you don't proceed for more than one minute, the VCR automatically exits from the TIMER SET/CHECK menu.

Daily/Weekly Recording

You can preset your VCR for daily or weekly recording. Daily recording records the same program every day of the week, while weekly recording records the same program on the same day every week. Follow steps 1 to 4 in "Setting the Timer" (pages 37 and 38).

Each time you press ▼, the indicator under the "DATE" column changes to one of these choices:

SUN—SAT (Every day of the week)
⬇
MON—SAT (Every day except Sunday)
⬇
MON—FRI (Every day except Saturday and Sunday)
⬇
EVERY SAT
•
•
•
EVERY TUE
⬇
EVERY MON
⬇
EVERY SUN

The Timer Recording Standby Mode

When you return the VCR to the timer recording standby mode, you can record any previously preset programs. The VCR turns on automatically to record the first preset program. When it finishes recording, the power automatically shuts off.

To stop timer recording, press TIMER REC (ON/OFF).

Buttons Operable During Timer Recording

TIMER REC (ON/OFF)	To stop timer recording (See "Changing or Cancelling the Timer Settings," page 42.)
COUNTER RESET	(See "Indexing Tape Contents," page 31.)
TV/VTR	(See "Watching One TV Program While Recording Another," page 36.)
DISPLAY	(See "The Display," page 31.)
MENU	For checking the programs only (See "Checking the Timer Settings," page 41.)

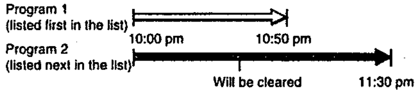
NOTE:
If a power interruption occurs during timer recording, recording will stop and your VCR will turn off. If power is restored within three hours, and it's before the recording end time, recording will start again from that point. If the interruption lasts for more than three hours, any presettings will be erased and you'll need to reset the time and date for your programs. Note that the tape counter will return to "0H00M00S."

Overlapping Timer Recordings

Case 1

If you preset two programs to record at the same time . . .

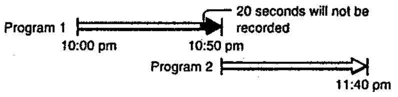
The program listed first on the TIMER SET/CHECK display has priority over the other programs. The timer settings for lower priority programs will be deleted from the TIMER SET/CHECK display when recording begins for the first program.


Program 1
(listed first in the list)
Program 2
(listed next in the list)
10:00 pm
10:50 pm
Will be cleared
11:30 pm

Case 2

If you set program 2 to record at the same time you set program 1 to finish recording . . .

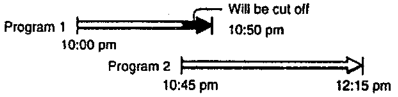
The last 20 seconds of program 1 will not be recorded.


Program 1
10:00 pm
20 seconds will not be recorded
10:50 pm
Program 2
11:40 pm

Case 3

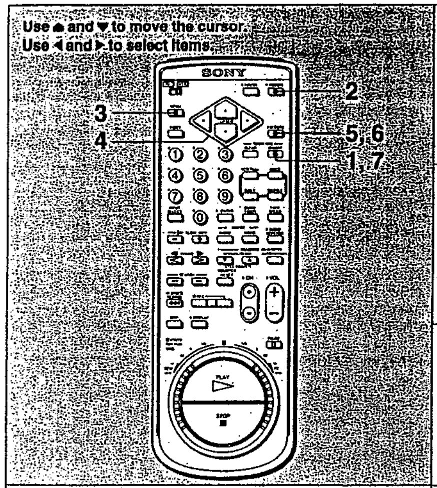
If you set program 2 to record before program 1 has finished recording . . .

Program 2 will begin recording before program 1 has finished.


Program 1
10:00 pm
Will be cut off
10:50 pm
Program 2
10:45 pm
12:15 pm

Checking the Timer Settings

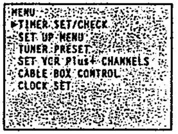
Here's how to display your timer settings to confirm the programs you wish to record.


Use ▲ and ▼ to move the cursor.
Use ◄ and ► to select items.
SONY
3
4
2
5,6
1,7

1 Press TIMER REC (ON/OFF).
The TIMER REC (recording) indicator on the VCR turns off.

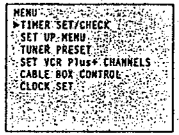
2 Press POWER.

3 Press MENU.
The main MENU appears.



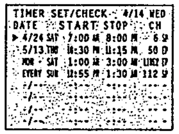
```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

4 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.



```
MENU
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET
```

5 Press EXECUTE.
The TIMER SET/CHECK display appears.



```
TIMER SET/CHECK   4/14 WED
DATE     START   STOP    CH
▶ 4/24 SAT  7:00 AM  8:00 PM   6 SP
  5/13 THU 10:30 PM 11:15 PM  50 EP
  MON - SAT  1:00 AM  3:00 AM
  EVERY SUN 11:55 PM  1:30 AM 112 SP
  -/--  --:--  --:--  ---
  -/--  --:--  --:--  ---
  -/--  --:--  --:--  ---
  -/--  --:--  --:--  ---
```

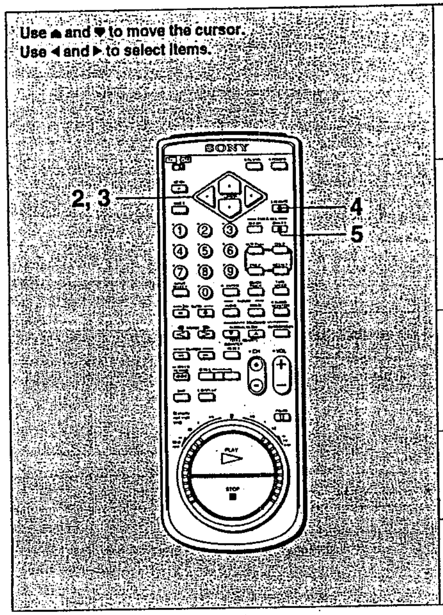
6 Press EXECUTE to return to the original screen.

7 Press TIMER REC (ON/OFF).
The VCR returns to the timer recording standby mode.
Leave the cable box on.

NOTES:
- If you set a program to record only one time, that setting is erased from the TIMER SET/CHECK display when the recording has finished.
- To check the timer settings during timer recording, follow steps 3 to 6 above.

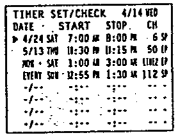
Changing or Cancelling the Timer Settings

Here's how to change or cancel any timer settings from the TIMER SET/CHECK display:



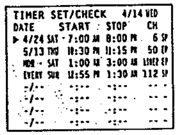
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select items.

1 **Display the TIMER SET/CHECK menu on the TV screen by following the procedures outlined in "Checking the Timer Settings" on page 41.**



```
TIMER SET/CHECK   4/14 WED
DATE      START    STOP.   CH
▶ 4/24 SAT  7:00 AM  8:00 PM   6 SP
  5/13 THU 10:30 PM 11:15 PM  50 LP
  MON - SAT  1:00 AM  3:00 AM LINE2 LP
  EVERY SUN 12:55 PM  1:30 AM 112 SP
  -/--      --:--    --:--    -- -
  -/--      --:--    --:--    -- -
  -/--      --:--    --:--    -- -
  -/--      --:--    --:--    -- -
```

2 **Press ▲ or ▼ to move the cursor (▶) to the program you wish to change or cancel.**



```
TIMER SET/CHECK   4/14 WED
DATE      START  : STOP    CH
▶ 4/24 SAT  7:00 AM  8:00 PM   6 SP
  5/13 THU 10:30 PM 11:15 PM  50 LP
  MON - SAT  1:00 AM  3:00 AM LINE2 EP
  EVERY SUN 12:55 PM  1:30 AM 112 SP
  -/--      --:--    --:--    -- -
  -/--      --:--    --:--    -- -
  -/--      --:--    --:--    -- -
  -/--      --:--    --:--    -- -
```

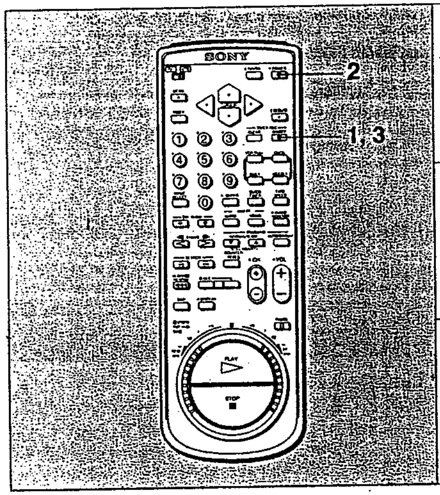
3 **To change a program, select the item to be changed by pressing ◀ or ▶, then make changes by pressing ▲ or ▼.**
To cancel it, press TIMER CLEAR.
Repeat this step to change or cancel other settings.

4 **Press EXECUTE.**
This stores the changes and returns you to the original screen.

5 **Press TIMER REC (ON/OFF).**
This returns you to the timer recording standby mode.
Leave the cable box on.

Using the VCR Before Timer Recording Starts

If you want to use your VCR while it's in the timer recording standby mode, you must first turn off the TIMER REC (recording) indicator on the VCR. Here's how:



1 **Press TIMER REC (ON/OFF).**
The TIMER REC (recording) indicator on the VCR turns off and the VCR leaves the timer recording standby mode.

2 **Press POWER.**
The VCR is ready for use.

3 **After using the VCR, press TIMER REC (ON/OFF).**
The VCR returns to the timer recording standby mode and the TIMER REC (recording) indicator lights up.
Leave the cable box on.

Introducing VCR Plus+

VCR Plus+ is a feature used in Sony VCRs that simplifies the task of programming your VCR to make unattended recordings. Here's how it works:

Whenever you want to record a TV program, all you need to do is to look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV Guide* magazine.

PlusCode

5:30 14 MOVIE — Musical (2hrs.) 33044
2 SPORTS — Golf (1hr. 25min.) 42060
CNN —WS 9974
6:30 2 3 4 DRAMA — Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY
(1hr. 15min.) 73457

Then, just enter the number of the program you want—using the Remote Commander—and the VCR is automatically programmed to record that show. It's that simple. With VCR Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the program's PlusCode!

Of course, there's some setup you'll need to do before you use VCR Plus+ for the first time. But after this initial setup, just think of how much easier it'll be to record your favorite TV programs, cable movies, and sporting events—all with the touch of a few buttons. VCR Plus+ makes programming your VCR easier than ever!

NOTE:
If PlusCodes aren't yet available in your area, they'll probably be introduced soon. Check with your local newspaper for details.

VCR Plus+ Setup Instructions

Setting up your VCR to use VCR Plus+ involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide).

If you don't have cable TV (i.e., if your TV receives its signal from an antenna only), the TV channel number and the guide channel number will probably be the same, in which case you'll only have to check that the two numbers match. For numbers that don't match, you must first perform the procedures that follow to get these channel numbers synchronized with each other.

To get the guide channel numbers, find the Channel Line-Up Chart in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the right.

If you have cable TV, you should then get the TV channel numbers for each channel from your cable company. (You may already know them.) Then **for channel numbers that are different**, enter the program guide channels (from the Program Guide), on the left, and the actual TV channels (from your cable system), on the right, as shown on page 45.

Example of "Channel Line-Up Chart"

	CABLE TV	Guide channel number
A&E	Arts & Entertainment Network	39
AMC	American Movie Classics	35
BRV	Bravo (program grid only)	54
CNN	Cable News Network	42
CSP	C-SPAN	28
DIS	The Disney Channel	53
DSC	The Discovery Channel	37
ESN	ESPN	34
FAM	The Family Channel	47
HBO	Home Box Office	33
LIF	Lifetime	46
MAX	Cinemax	45
MSG	Madison Square Gardens Network	19
MTV	Music Television	48
NIK	Nickelodeon	38
SC	Sports Channel	59
SCA	Sports Channel America	70
SHO	Showtime	41
TBS	TBS SuperStation	43
TMC	The Movie Channel	58
TNN	The Nashville Network	49
TNT	Turner Network News	52
USA	USA Network	44

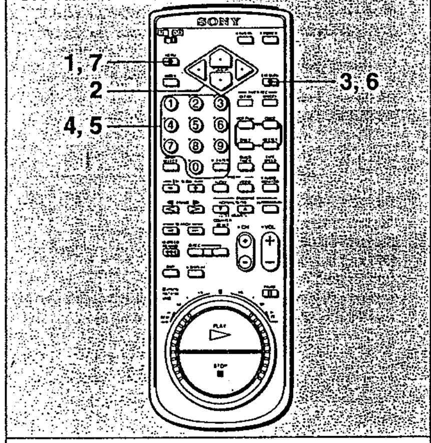
SAMPLE

For each channel your VCR receives, use the Channel Line-Up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-Up Chart on channel 33, and your VCR receives HBO on channel 15, you need to coordinate these numbers using the following procedures. For channels in which the numbers are the same (for example, if your VCR receives HBO on channel 33, and the guide channel number is 33), you can skip these procedures.

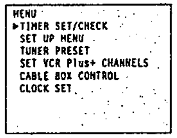
Example:

Guide Channel (from "Channel Line-Up Chart" in your program guide)	TV Channel (channel you actually use on you VCR)
33 (Home Box Office)	15

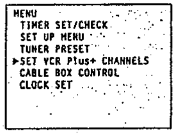
Use ▲ and ▼ to move the cursor.
Use ◀ and ▶ to select items.



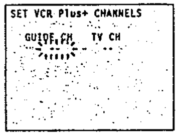
1 **Press MENU.**
The main MENU appears.



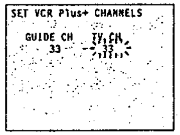
2 **Press ▼ or ▲ to move the cursor (▶) to SET VCR Plus+ CHANNELS.**



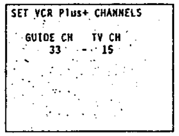
3 **Press EXECUTE.**
The SET VCR Plus+ CHANNELS menu appears.
The "GUIDE CH" field blinks.



4 **In the "GUIDE CH" field, enter 33 (the number assigned to this channel in the Channel Line-Up Chart) and press ENTER.**
The "TV CH" field blinks.

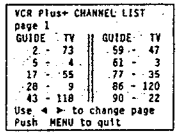


5 **In the "TV CH" field, enter 15 (the number to which you tune your VCR to watch this channel) and press ENTER.**



NOTE:
"The TV Channel setting will be different whether you use cable TV or not. Please refer to "Preparation" on page 6.

6 **For each channel in which the TV channel differs from the guide number, repeat steps 4 and 5, using the menus that are displayed.**
To check your channel settings, press EXECUTE.



```
VCR Plus+ CHANNEL LIST
page 1
GUIDE   TV  || GUIDE   TV
  2 -  73   ||  59 -  47
  5 -   4   ||  61 -   3
 17 -  55   ||  77 -  35
 28 -   9   ||  86 - 120
 43 - 118   ||  90 -  22
Use ◀ ▶ to change page
Push  MENU to quit
```

7 **When you've finished, press MENU to exit.**

Recording Programs Using VCR Plus+

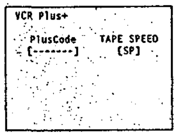
To use VCR Plus+ to record programs, all you need is the program's PlusCode, which you'll find in the program listings in your local newspaper, cable TV guide, or *TV Guide magazine.*
For example, to record the following program, just use the following procedures:

PlusCode

EXAMPLE: 13MOVIE---Comedy (2hrs.) 53292

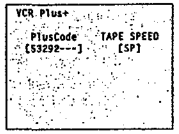
NOTE:
- You can set the program without opening the VCR Plus+ menu. Refer to the display window on the VCR.
- When you use a cable box, use Hookup 2 and set the CABLE BOX CONTROL (See "Setting the Cable Box Control" on page 25). Turn the cable box on.

1 **Press VCR Plus+.**
The VCR Plus+ TIMER SET menu appears.



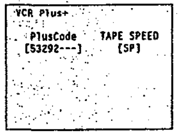
```
VCR Plus+
  PlusCode    TAPE SPEED
 [--------]      [SP]
```

2 **Enter 53292 (the program's PlusCode) in the PlusCode field.**
If you make a mistake, press TIMER CLEAR and enter the PlusCode again.



```
VCR Plus+
  PlusCode    TAPE SPEED
 [53292---]      [SP]
```

3 **To select the cassette's recording speed (SP or EP), press TAPE SPEED.**
Unless you change the cassette speed, SP is used.
See "Maximum recording time of a cassette" on page 29 for information about cassette speeds.



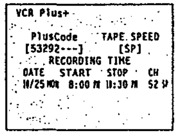
```
VCR Plus+
  PlusCode    TAPE SPEED
 [53292---]      [SP]
```

4 **Press ONCE, DAILY, or WEEKLY on the Remote Commander.**

See the following chart for details of these options.

ONCE: Records scheduled programs one time only.
WEEKLY: Records every week at the same scheduled time.
DAILY M-F: Records Monday to Friday at the same scheduled time.

The VCR Plus+ menu displays the recording information: date, program start and stop times, channel number, and tape speed.
If you make a mistake, press TIMER CLEAR, and start from the beginning.



```
VCR Plus+
  PlusCode      TAPE.SPEED
 [53292---]        [SP]
       RECORDING TIME
 DATE    START    STOP    CH
 10/25MON 8:00 PM 10:30 PM 52
```

5 **If you want to set another program, repeat steps 1 to 4.**

6 **Insert a cassette into your VCR.**

7 **Press TIMER REC (ON/OFF) to set the VCR's recording timer.**
The VCR enters the timer recording standby mode.
Your VCR is now set up to record the programs you've selected. The VCR will turn on automatically, record the program, and then turn off until the next programmed show is ready for broadcast.
For checking, changing, and cancelling the settings, see pages 41 and 42.
Leave the cable box on.

NOTES:
You can't set the timer using PlusCodes in the following cases:
- When the VCR is turned off
- While the VCR is in the timer-recording or quick-timer recording mode
- When the VCR is in the timer-recording standby mode

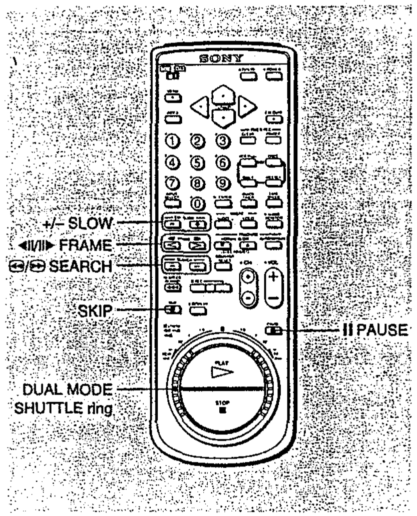
The timer will not accept settings in the following cases:
- When you select DAILY for a Saturday and Sunday program
- When you select WEEKLY or DAILY for a program more than seven days ahead. (The WEEKLY and DAILY settings only work for the current week.)
- When you enter the PlusCode of a program that has already ended

Variable Speed Playback

The following section explains the advanced playback functions you can do with your VCR.

Variable Speed Playback

Using the DUAL MODE SHUTTLE ring on your VCR or Remote Commander, you can play cassettes at a variety of forward and reverse speeds. You can also freeze a picture using the pause function.



Still Picture

When playing back a cassette, press II PAUSE to hold the picture in one place. To resume normal playback, press either ▶ PLAY or II PAUSE. If you leave your VCR in the pause mode, normal playback resumes after approximately 5 minutes.

Picture Search

By turning the DUAL MODE SHUTTLE ring either clockwise for forward viewing or counterclockwise for viewing in reverse, you can control the cassette playback speed.

- **Picture Search During Playback or Pause Modes**

While playing or pausing a cassette, turn the DUAL MODE SHUTTLE ring until one of the double arrow indicators ◀◀ (left side) or ▶▶ (right side) lights up.
A high-speed picture without sound displays on the screen until you release the ring.

When you release the DUAL MODE SHUTTLE ring, it returns to its original position.
If you release the ring while in the pause mode, the picture returns to pause. If you release it during playback, the picture returns to playback.

NOTE:
If you quick search a cassette recorded in the LP cassette speed, your picture may change to black and white, depending on the TV you're using.

- **Picture Search While Fast-Forwarding or Rewinding a Cassette**

When fast-forwarding or rewinding a cassette, turn the DUAL MODE SHUTTLE ring to preview a high-speed picture (clockwise for forward viewing or counterclockwise for reverse viewing).

When you release the ring, it returns to its original position and the VCR continues fast-forwarding or rewinding.

Locked Picture Search

This feature lets you lock in and view a high-speed picture while playing or pausing a cassette. In the play or pause mode, press ⊖ SEARCH (reverse) or ⊕ SEARCH (forward) on the Remote Commander.
To resume normal playback, press ▶ PLAY.

Skip Playback

While playing a cassette, press SKIP on the Remote Commander.
This feature lets you view your cassette at high speed for about 30 seconds before resuming normal playback.

Slow Motion Playback

During playback or playback pause mode, press I▶ SLOW + or – on the Remote Commander. Change the slow motion speed with the + or – buttons.
Press + to increase the playback speed, and – to decrease the playback speed.
You can also use the ◀II FRAME (reverse) and FRAME II▶ (forward) buttons to change direction during slow-motion playback.

Frame-by-Frame Picture

During the playback pause mode, press FRAME II▶ > to advance the picture one frame or ◀II < FRAME to reverse the picture one frame.
Each time you press the button, the picture moves one frame. To resume normal playback, press ▶ PLAY.

Picture Adjustment During Variable Speed Playback

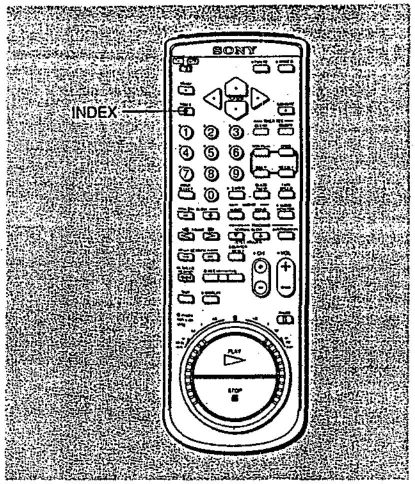
If a picture played in slow motion displays streaks, adjust the picture with the TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ buttons on the Remote Commander. You can adjust the picture more easily by changing the speed closer to normal playback by pressing I▶ SLOW +.
If the picture appears to shake in the still mode, adjust it using the STILL ADJUST ▼/▲ buttons on the Remote Commander until the picture stabilizes.
When pausing a cassette, you may notice a band at the top or bottom of the screen. Adjust the picture by playing back the cassette in slow motion and using the TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ buttons on the Remote Commander.

NOTE:
Some streaks and/or snow are unavoidable when playing back a cassette in the reverse or reverse slow modes.

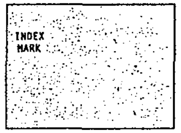
Index Function

You can find specific locations on a cassette using your VCR's index function.

Index Signals

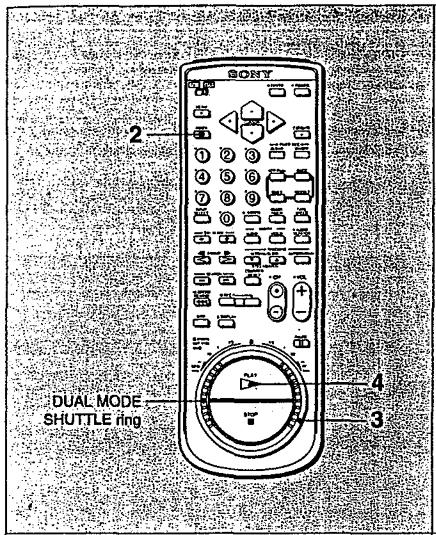


The VCR automatically inserts index signals each time you use the recording, timer recording or quick-timer recording functions (index mark). When an index mark is made, INDEX MARK appears on the TV screen. The index works as a divider between scenes, and is not numbers. So, when you specify the index mark later, you have to specify the relative position from the current position (the first index, the second index... from the current position). When going from the recording pause mode to the recording mode, an index is not inserted.



Playing Back from the Index Point — Index Scan

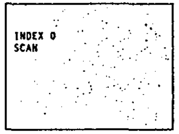
Here's how to find and play a program you've marked with an index signal:



1 **Insert an indexed cassette into your VCR.**

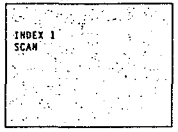
2 **Press INDEX once.**
The INDEX SCAN indicator appears on the TV screen.

TV screen



3 **Turn the DUAL MODE SHUTTLE ring clockwise to find the next program, or counter clockwise to find the previous program.**
The index scan locates the next marked index signal and plays about 10 seconds of tape prior to the signal. The VCR then rewinds or advances to the next index signal. Every time the VCR finds an index signal, playback begins and the displayed index number increases.

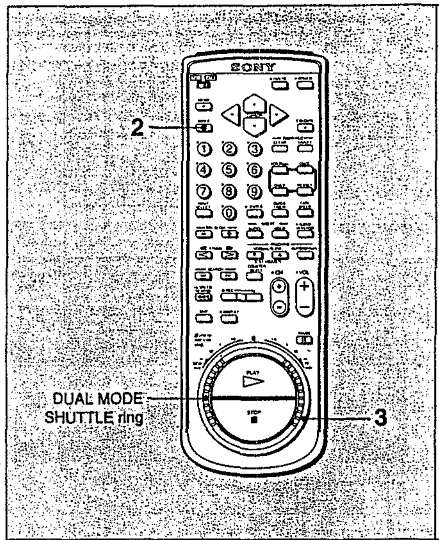
TV screen



4 **When you find the program you want, press ► PLAY.**
Playback starts from that point.

Locating an Index — Index Search

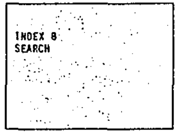
Locate an index by indicating how many index signals ahead or behind that program is from the cassette's current position. Here's how:



1 Insert an indexed cassette into your VCR.

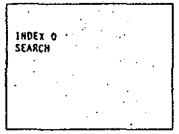
2 Press INDEX until the index number for the desired program appears on your TV screen.
The VCR exits from the index mode, if you pass index number 19.

TV screen



3 Turn the DUAL MODE SHUTTLE ring clockwise to locate an upcoming index signal or counterclockwise for a prior index signal.
The cassette rewinds or advances to the next index. Each time an index signal is detected, the index number decreases. When the number reaches 0, your VCR will begin to play.

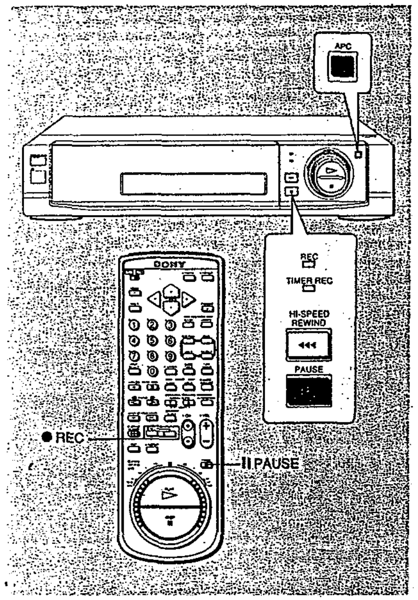
TV screen



APC (Adaptive Picture Control)

This function automatically improves recording and playback quality by adjusting the VCR for the condition of the video heads and video tape. To maintain better picture quality, we recommend that you leave the function on. (The APC button/indicator remains lit.)

Using the APC Function when Recording



Before you start recording, make sure the APC button/indicator is lit. If it is not, press the APC button/indicator so that it lights up.
The light flashes rapidly while the tape is being measured. The complete measurement is retained until the cassette is ejected. If you use that same tape again without ejecting it, the tape is not measured again.

When you are in the recording pause mode and the APC button/indicator flashes slowly
The APC function does not operate if you press II PAUSE to release the pause mode.
To use the APC function when the indicator flashes slowly, press ● REC. After measurement is completed, the VCR returns to the recording pause mode. Press II PAUSE to start recording.

When you are using timer recording
When you want to use the APC function during timer recording, press the APC button/indicator so that it lights up, then press the TIMER REC button.

Using the APC Function when Playing Back a Tape

When the APC button/indicator is on, the APC function automatically works on all types of tapes, including rental tapes. You can play back a tape using the APC function even if the tape was not recorded with it.

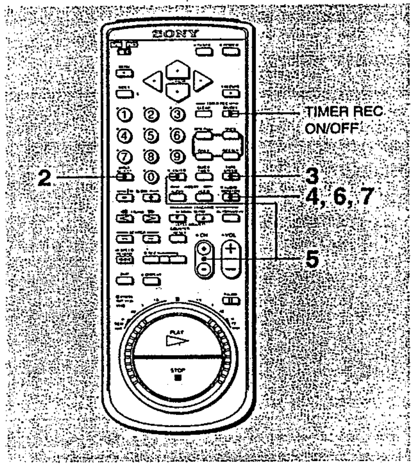
Notes:
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- If you have the PICTURE switch on the VCR set to EDIT, the APC function does not operate when playing back a tape but does operate when recording.
- When doing audio/video insert editing, turn off the APC function as the timing of the insert may be incorrect when the function is on.
- To ensure accurate timing during synchronized editing, use the APC function on the recording VCR (this VCR), as the timing of the recording will not be accurate when using the APC function on the playback VCR.

Quick-Timer Recording

This function allows you to preset your VCR to record for a specified amount of time from now, without having to set the recording start time.

NOTE:
- Before you begin, make sure the clock has been set, then ensure that the timer recording function is turned off by checking the TIMER REC (recording) indicator. If the indicator is lit, press TIMER REC ON/OFF to turn it off.
- When you use a Cable Box, use Hookup 2 and set the CABLE BOX CONTROL (See "Setting the Cable Box Control" on page 25). Turn the cable box on.

Quick-Timer Recording



If you're currently recording, skip to step 7.

1 **Insert a cassette into your VCR.**

2 **Press INPUT SELECT to select the input you want, which will then light up in the display window.**

3 **Select the desired recording speed (SP or EP) by pressing TAPE SPEED.**

4 **Press QUICK TIMER.**
If you insert a cassette without its safety tab, your VCR will eject the cassette.

5 **When you want to record a TV program, select the channel you wish to record using the CH +/– or channel number buttons. Press ENTER while the channel display flashes.**

6 **Press QUICK TIMER again to start recording.**

7 **Select the recording duration by pressing QUICK TIMER to change the duration indicator in the display window. Each time you press QUICK TIMER, the recording duration increases by 30 minutes.**

$$0{:}00 \rightarrow 0{:}30 \rightarrow 1{:}00 \cdots\cdots\cdots 9{:}00$$

To stop quick-timer recording

To stop quick-timer recording while a program is being recorded, press TIMER REC ON/OFF.

Buttons Operable During Quick-Timer Recording

TIMER REC (ON/OFF)	To stop quick-timer recording
QUICK-TIMER	To change recording duration
COUNTER RESET	To reset the counter to zero
TV/VTR	To watch the picture broadcast on another channel (TV)
MENU	Only operable to check the timer recording settings. (See "Checking the Timer Settings," on page 41.)

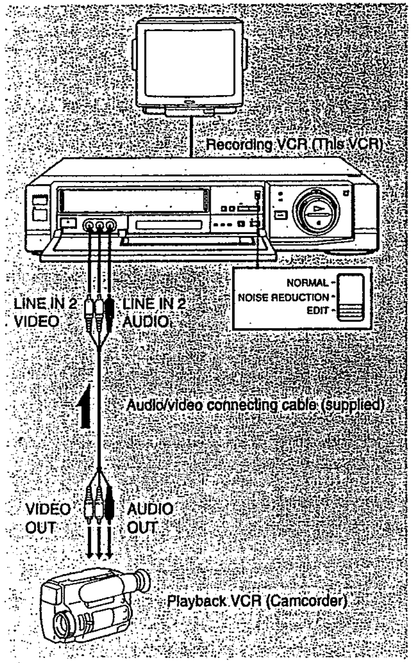
NOTES:
- If your cassette ends during quick-timer recording, recording stops and the VCR turns off. The cassette will not rewind automatically.
- If a power interruption occurs during quick-timer recording, recording will stop and your VCR will turn off. If the interruption lasts less than three hours and the power is restored before the recording end time, recording will start again from that point.

Editing

Using an additional VCR, you can record programs from one VCR to the other. Here's how:

Editing from Another VCR

Here's how to edit from another VCR (such as an 8mm video camera recorder for playback) when using this VCR for recording.



Before you start:
- Select LINE 1 or LINE 2 with INPUT SELECT, whichever the playback VCR is connected to.
- Select SP or EP with TAPE SPEED.
- Select the EDIT position on the PICTURE switch.

NOTE:
If your playback VCR has an editing function, select it to reduce static and improve reception.

How to edit:

1 **Insert a blank cassette into the recording VCR with a safety tab in place.**

2 **Turn on the playback VCR and insert a source cassette.**

3 **Locate the playback start point and select the playback pause mode on the playback VCR.**

4 **Locate the recording start point and select the recording pause mode on the recording VCR.**

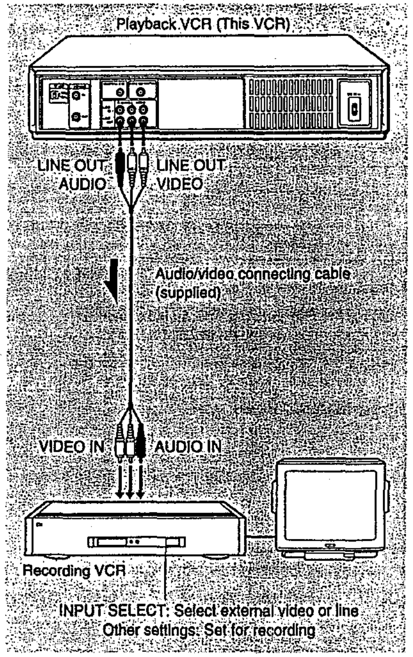
5 **Press II PAUSE on both VCRs.**

For best results, press II PAUSE on the playback VCR just before pressing II PAUSE on the recording VCR.
When you've finished editing, press ■ STOP on both VCRs.
When you release the recording pause mode, the APC function may not operate.
For details, see page 53.

NOTES:
- If your playback VCR is a stereo unit, make connections with the supplied audio/video connecting cable.
- If your playback VCR is a monaural unit, connect the white plug to LINE IN 2 AUDIO L on this VCR. This lets you record the sound of the playback VCR on both channels of this VCR. Do not connect the white plug to LINE IN 2 AUDIO R.
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- If you have the PICTURE switch on the VCR set to EDIT, the APC function does not operate when playing back a tape but does operate when recording. When you are editing tapes (dubbing) using this unit as either the recording VCR or the playback VCR, use the EDIT setting.

Editing onto Another VCR

Here's how to use this VCR as the playback VCR and another VCR as the recording VCR.


Playback VCR (This VCR)
LINE OUT AUDIO
LINE OUT VIDEO
Audio/video connecting cable (supplied)
VIDEO IN
AUDIO IN
Recording VCR
INPUT SELECT: Select external video or line
Other settings: Set for recording

Before you start:

- **Select the EDIT position on the PICTURE switch.**
  If your recording VCR has an editing function, it should also be selected to improve reception.
- **Press DISPLAY to TURN OFF the display.**

How to edit:

1 **Turn on the recording VCR and insert a blank cassette with a safety tab in place.**

2 **Insert a source cassette into the playback VCR.**

3 **Locate the playback start point and select the playback pause mode on the playback VCR.**

4 **Locate the recording start point and select the recording pause mode on the recording VCR.**

5 **Press II PAUSE on both VCRs.**
For best results, press II PAUSE on the playback VCR just before pressing II PAUSE on the recording VCR. When you've finished editing, press ■ STOP on both VCRs.

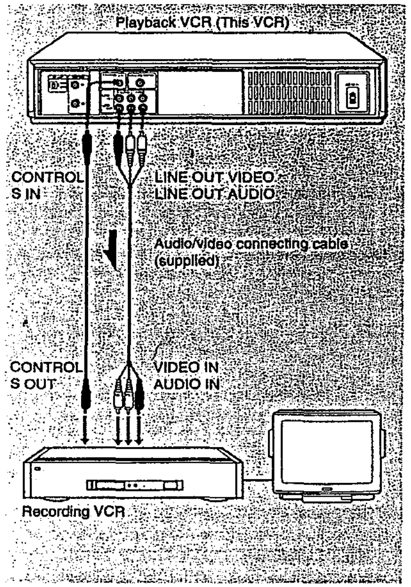
NOTES:

- If your recording VCR is a stereo unit, make connections with the supplied audio/video connecting cable.
- If your recording VCR is a monaural unit, make connections using the VMC-910MS/920MS cable (not supplied).
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- If you have the PICTURE switch on the VCR set to EDIT, the APC function does not operate when playing back a tape but does operate when recording. When you are editing tapes (dubbing) using this unit as either the recording VCR or the playback VCR, use the EDIT setting.

Synchronized Editing onto Another VCR

Synchronized editing is the process of recording and editing a program from either a video camera recorder or a VCR to another VCR. Because this editing function involves one VCR controlling another VCR or video camera recorder, it is said to be "synchronized".

The following illustration shows you how to use this VCR for playback and either a Sony VHS VCR or certain 8mm VCRs having a Control S OUT terminal and synchro edit function for recording.


Playback VCR (This VCR)
CONTROL S IN
LINE OUT VIDEO
LINE OUT AUDIO
Audio/video connecting cable (supplied)
CONTROL S OUT
VIDEO IN
AUDIO IN
Recording VCR

Before you start:

- Select external video or LINE on recording VCR.
- Make necessary settings for recording.
- Select the EDIT position on the PICTURE switch.

How to edit:

1 **Turn on the recording VCR and insert a blank cassette.**

2 **Insert a source cassette into the playback VCR.**

3 **Locate the edit start point and select the recording pause mode on the recording VCR.**

4 **Locate the playback start point and select the playback pause mode on the playback VCR.**

5 **Press SYNCHRO EDIT on the recording VCR.**
Both recording and playback will start.

6 **At the desired edit end point, press SYNCHRO EDIT on the recording VCR.**
The recording VCR enters the recording pause mode and the playback VCR enters the playback pause mode.

7 **To edit the next scene, repeat steps 4, 5, and 6.**
When you've finished editing, press ■ STOP on both VCRs.

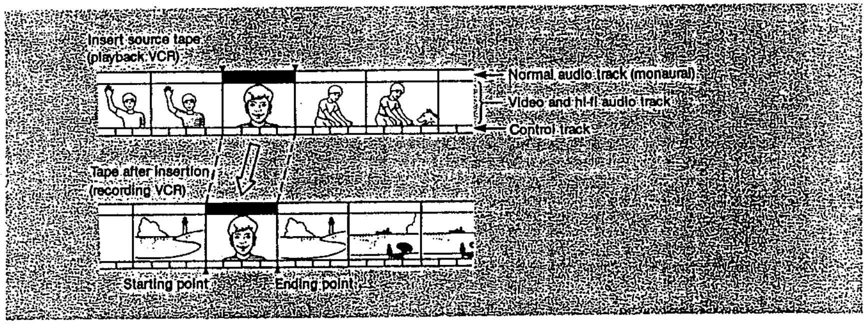
NOTES:

- If your recording VCR is a monaural unit, make connections using the VMC-910MS/920MS cable (not supplied).
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.

Insert Editing

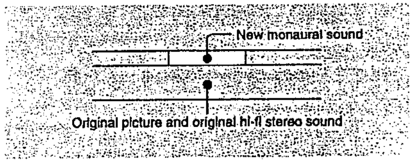
When you want to replace one prerecorded scene (and its sound) with another, you can use your SLV-900HF's insert editing function. This function lets you make either audio inserts, video inserts, or both audio and video inserts.

How the Insert Editing Function Works


Insert source tape
(playback VCR)
Normal audio track (monaural)
Video and hi-fi audio track
Control track
Tape after insertion
(recording VCR)
Starting point
Ending point

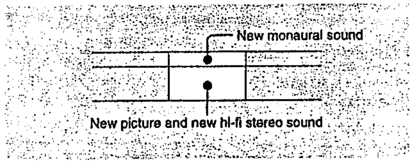
Audio Insert

You can insert a monaural soundtrack onto a prerecorded cassette. The picture and hi-fi stereo sound of the video and hi-fi audio track are retained.


New monaural sound
Original picture and original hi-fi stereo sound

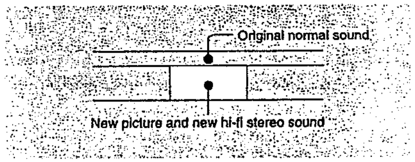
Audio and Video Insert

You can insert a new picture, hi-fi stereo sound, and a new monaural sound onto a prerecorded cassette.


New monaural sound
New picture and new hi-fi stereo sound

Video Insert

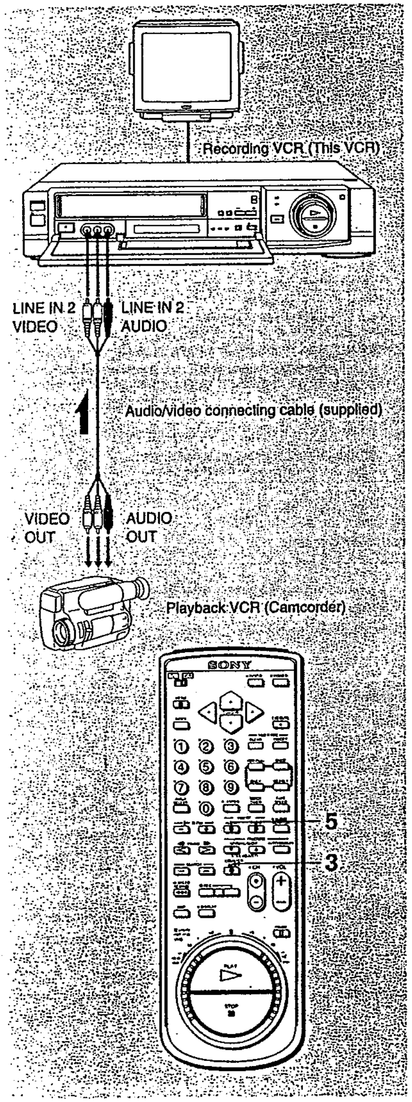
You can insert a new picture and hi-fi stereo sound from a video and hi-fi audio track onto a prerecorded cassette. Note that the original audio track is retained.


Original normal sound
New picture and new hi-fi stereo sound

Insert Indicators and On-screen Display

Insert	Indicator	On-screen Display
Audio	INSERT AUDIO lights up	A INS
Video	INSERT VIDEO lights up	V INS
Audio/ video	INSERT AUDIO/VIDEO lights up	A V INS

Insert Editing from another VCR


Recording VCR (This VCR)
LINE IN 2
VIDEO
LINE IN 2
AUDIO
Audio/video connecting cable (supplied)
VIDEO
OUT
AUDIO
OUT
Playback VCR (Camcorder)
SONY
5
3

Before you start:

- For connection, see pages 55 through 56. (The CONTROL S connections are not needed.)
- Select the insert source from the equipment connected to LINE IN 1 or 2.
- Connect the VCR to an audio system for "audio insert."
- Select the EDIT position on the PICTURE switch.

How to edit:

1 **Insert a source cassette into the playback VCR and a cassette for recording into this VCR.**

2 **On the recording VCR locate the edit end point, then press II PAUSE on this VCR.**

3 **Press COUNTER RESET on the recording VCR.**

4 **On the recording VCR, rewind the cassette to locate the starting point and set the VCR to the playback pause mode.**
The DUAL MODE SHUTTLE ring is useful for locating a desired starting point.

5 **Press INSERT AUDIO VIDEO.**
For audio insert, press AUDIO. The INSERT AUDIO indicator lights up on the VCR.
For video insert, press VIDEO. The INSERT VIDEO indicator lights up on the VCR
For audio and video insert, press the AUDIO INSERT and then press VIDEO INSERT. Both the INSERT AUDIO and INSERT VIDEO indicators light up on the VCR.

6 **On the playback VCR, locate the starting point where you want to start the insertion and set the VCR to the playback pause mode.**

7 **Press II PAUSE on both VCRs to start the insertion.**
At the ending point (0H00M00S), the insertion stops automatically. (To stop playback, press ■ STOP.)

To stop the insertion temporarily:
Press II PAUSE.

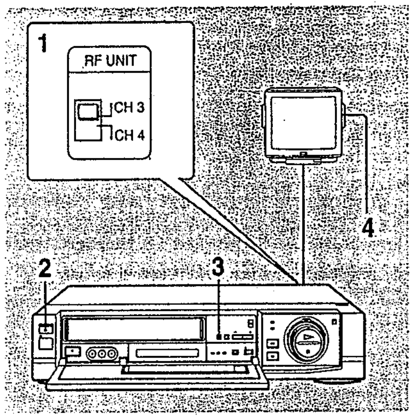
To stop ongoing insertion:
Press ■ STOP

NOTES:

- Audio/video inserts cannot be made onto an unrecorded portion of a cassette.
- After the insertion, the previous picture and/or sound will be erased.

General Setup Information

Setting the RF UNIT



Why this setting is necessary:

You must set the RF UNIT selector at the rear of the VCR properly so that your TV can receive the correct signal from the VCR. Set the selector to CH 3 (channel 3) or CH 4 (channel 4), whichever is not active in your area.

If you connect a TV or color monitor equipped with A/V input jacks, skip this step.

1 **Set the RF UNIT at the rear of the VCR to CH 3 or CH 4, whichever is not active in your area.**

2 **Press POWER.**
The power indicator lights up on the VCR.

3 **Press TV/VTR.**
The VTR indicator lights up in the display window.

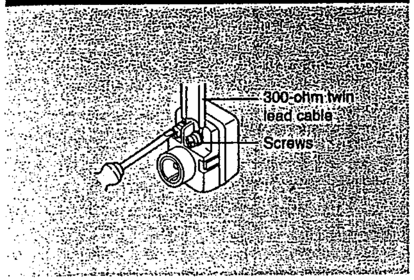
4 **Select an active channel in your area by pressing CHANNEL +/–.**

5 **Turn on your TV and set it to the channel you selected in step 1.**

Your TV is now tuned to the VCR. Whenever you use the VCR, set the TV to the preselected channel.

NOTE:
For details on adjusting TV channels, see your TV instruction manual.

Attaching the External Antenna Connector (supplied)

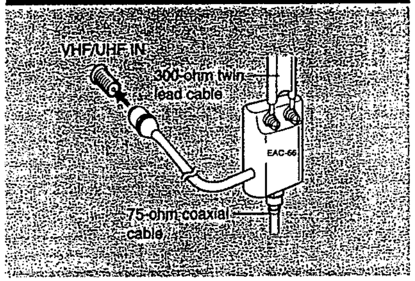


1 **Loosen the screws on the antenna connector.**

2 **Fit the 300-ohm twin lead cable on the UHF antenna under the screws on the antenna connector.**

3 **Retighten the screws.**

Attaching the EAC66 U/V Band Separator/Mixer (not supplied)



1 **Loosen the screws on the U/V band separator/mixer.**

2 **Fit the 300-ohm twin lead cable on the UHF antenna under the screws.**

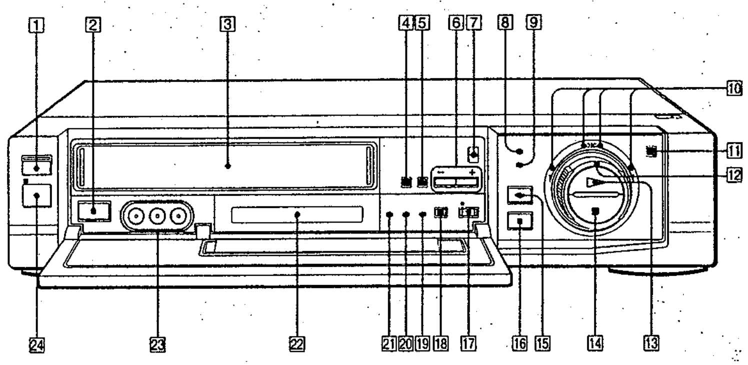
3 **Connect the 75-ohm coaxial cable to the U/V band separator/mixer.**

4 **Connect the U/V band separator/mixer to the VHF/UHF IN plug on the VCR.**

Identifying the Parts and Controls

Refer to the pages indicated for details.

Front Panel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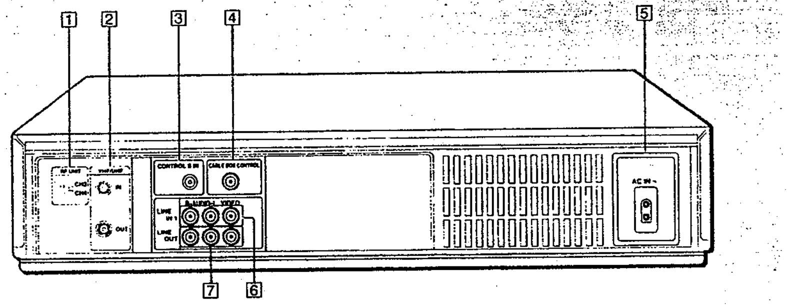
24

1 POWER ON/OFF switch and indicator (See page 60.)
2 ≜ EJECT button (See page 29.)
3 Cassette compartment (See page 29.)
4 TV/VTR button (See page 16.)
5 INPUT SELECT button (See page 32.)
6 CHANNEL –/+ buttons (See page 34.)
7 PICTURE switch (See page 30.)
8 REC indicator (See page 34.)
9 TIMER REC indicator (See page 38.)
10 FF, REW, PB, REV indicators
11 APC button/indicator (See page 53.)
12 DUAL MODE SHUTTLE ring (See page 48.)
13 ► PLAY button (See page 30.)
14 ■ STOP button (See pages 30 to 34.)
15 ◄◄◄ HI-SPEED REWIND button/indicator (See page 30.)
16 II PAUSE button/indicator (See pages 30 & 34 & 48.)
17 ● REC button (See page 34.)
18 TIMER REC ON/OFF button (See page 38.)
19 STEREO indicator (See page 32.)
20 INSERT VIDEO indicator (See page 58.)
21 INSERT AUDIO indicator (See page 58.)
22 Display window (See page 64.)
23 LINE IN 2 VIDEO/AUDIO jacks (See page 55.)
24 Remote sensor (See page 16.)

Refer to the pages indicated for details.

Rear Panel


1
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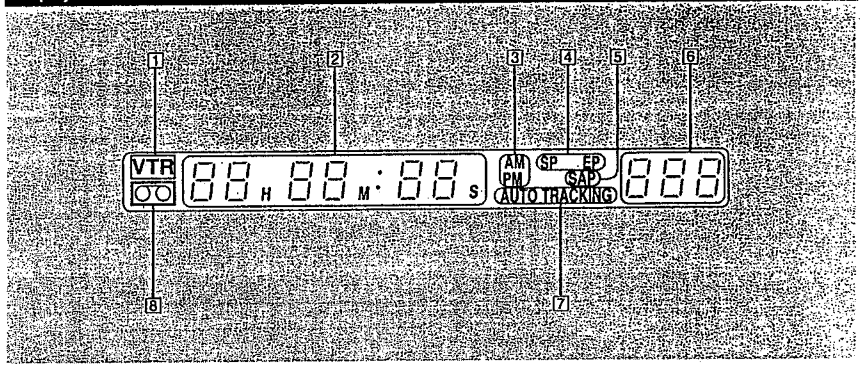
7
CONTROL S IN
CABLE BOX CONTROL
RF UNIT
CH3
CH4
VHF/UHF
IN
OUT
LINE IN 1
LINE OUT
AUDIO
VIDEO
AC IN

1 RF UNIT selector (See page 60.)
2 VHF/UHF IN/OUT connectors (F-type) (See pages 8 & 10 & 12 & 14.)
3 CONTROL S IN jack (See page 57.)
4 CABLE BOX CONTROL jack (See page 8.)
5 AC IN socket (See page 6.)
6 LINE IN 1 AUDIO and VIDEO jacks (phono type) (See page 7.)
7 LINE OUT AUDIO and VIDEO jacks (phono type) (See page 7.)

Refer to the pages indicated for details.

Display Window Indicators


1
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5
6
VTR
H
M
S
AM
PM
SP
EP
SAP
AUTO TRACKING
8
7

1 VTR indicator (See page 34.)

2 Linear time counter and clock

3 AM/PM indicator

4 Tape speed indicator (See page 34.)

5 SAP (See page 36.)

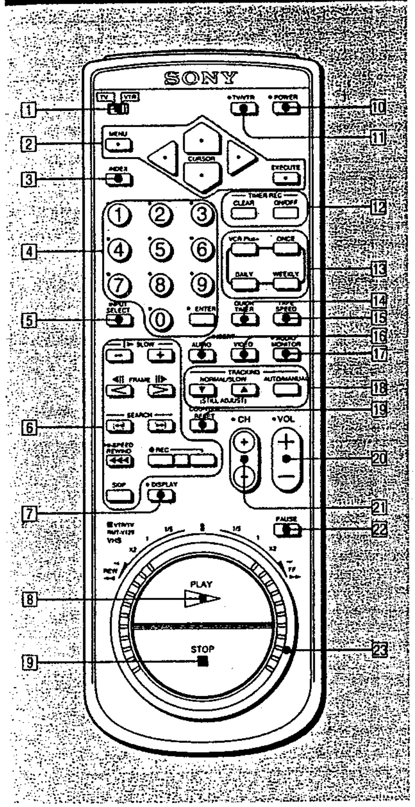
6 Line and channel indicator

7 AUTO TRACKING indicator (See page 32.)

8 Cassette indicator (appears when a cassette is loaded) (See page 29.)

Refer to the pages indicated for details.

Remote Commander


SONY
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19
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22
23
MENU
INDEX
CURSOR
EXECUTE
TIMER REC
CLEAR
ON/OFF
VCR Plus+
ONCE
DAILY
WEEKLY
ENTER
QUICK TIMER
TAPE SPEED
INPUT SELECT
SLOW
AUDIO
VIDEO
AUDIO MONITOR
FRAME
TRACKING
NORMAL/SLOW
AUTO/MANUAL
STILL ADJUST
SEARCH
COUNTER RESET
CH
VOL
HI-SPEED REWIND
REC
SKIP
DISPLAY
PAUSE
REW
FF
PLAY
STOP

1 TV/VTR remote control selector (See page 16.)

2 Menu operations buttons (See pages 19 and 20.)
MENU button
Cursor buttons (▲/▼/◄/►)
EXECUTE button

3 INDEX button (See page 50.)

4 Channel number buttons and ENTER button (See page 34.)

5 INPUT SELECT button (See page 34.)

6 Tape transport buttons
I► SLOW –/+ buttons (See page 49.)
</> ◄II FRAME II► buttons (See page 49.)
⊖/⊕ SEARCH buttons (See page 49.)
◄◄◄ HI-SPEED REWIND button (See page 30.)
● REC button (See page 34.)
SKIP button (See page 49.)

7 DISPLAY button (See page 31.)

8 ► PLAY button (See page 30.)

9 ■ STOP button (See pages 30 & 34.)

10 POWER button (See page 60.)

11 TV/VTR button (See page 16.)

12 TIMER REC buttons (See page 42.)
CLEAR button
ON/OFF button

13 VCR Plus+ buttons (See page 46.)
VCR Plus+ button
ONCE button
DAILY button
WEEKLY button

14 QUICK TIMER button (See page 54.)

15 TAPE SPEED button (See page 38.)

16 INSERT buttons (See page 58.)
AUDIO button
VIDEO button

17 AUDIO MONITOR button (See page 32.)

18 TRACKING buttons (See pages 32 & 49.)
▼/▲ NORMAL/SLOW (STILL ADJUST) buttons
AUTO/MANUAL button

19 COUNTER RESET button (See page 31.)

20 VOL (volume) button

21 CH (channel) button

22 PAUSE button (See pages 30 & 34 & 48.)

23 DUAL MODE SHUTTLE ring (See pages 30 & 48.)

Troubleshooting

If you have a problem with your VCR, first check the power cord connection, then go through the following list. Should the difficulty persist, unplug the unit, and contact your Sony dealer or local authorized Sony Service Center facility.

	Symptom	Possible causes and remedies
Power	The POWER switch doesn't work.	• The power cord is disconnected. • The VCR is in the timer standby mode.
	The power is turned on but the VCR doesn't work.	• The safety device on the VCR has switched on. Turn the power off, disconnect the power cord from the wall outlet, and let the VCR rest for at least an hour before trying it again.
Time and Date Clock	The clock has stopped and "–:– –" lights up.	• There has been a power interruption. Reset the time, date and timer settings.
TV Reception	TV reception is poor.	• The channel for the VCR is not correctly tuned on the TV. • The TV signal is weak. Adjust the direction of the antenna. • The AC power cord of the VCR is disconnected.
Recording and Playback	Shaky and/or snowy picture during recording.	• The TV's channel is not set to the one preset for the VCR. • The TV signal is weak. Adjust the direction of the antenna.
	No picture on the TV screen.	• Press TV/VTR so that the VTR indication appears in the display window. • The TV channel is not set to CH 3 or CH 4, or the video input has not been selected on the TV or monitor.
	The VCR won't record.	• No cassette has been inserted. • The cassette is at its end. • INPUT SELECT is not set correctly.
	The playback picture is not clear.	• The channel for the VCR is not correctly tuned on the TV. • A cassette recorded on another VCR is being played back. Adjust the tracking with the TRACKING NORMAL/SLOW and STILL ADJUST. • The video heads are dirty. Clean the heads using the Sony T-25CL video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If a cleaning cassette is not available in your area, have the heads cleaned at your nearest Sony Service Center facility. (Do not use a commercially-available wet-type cleaning cassette. It may damage the video heads.) • The video heads are worn out.

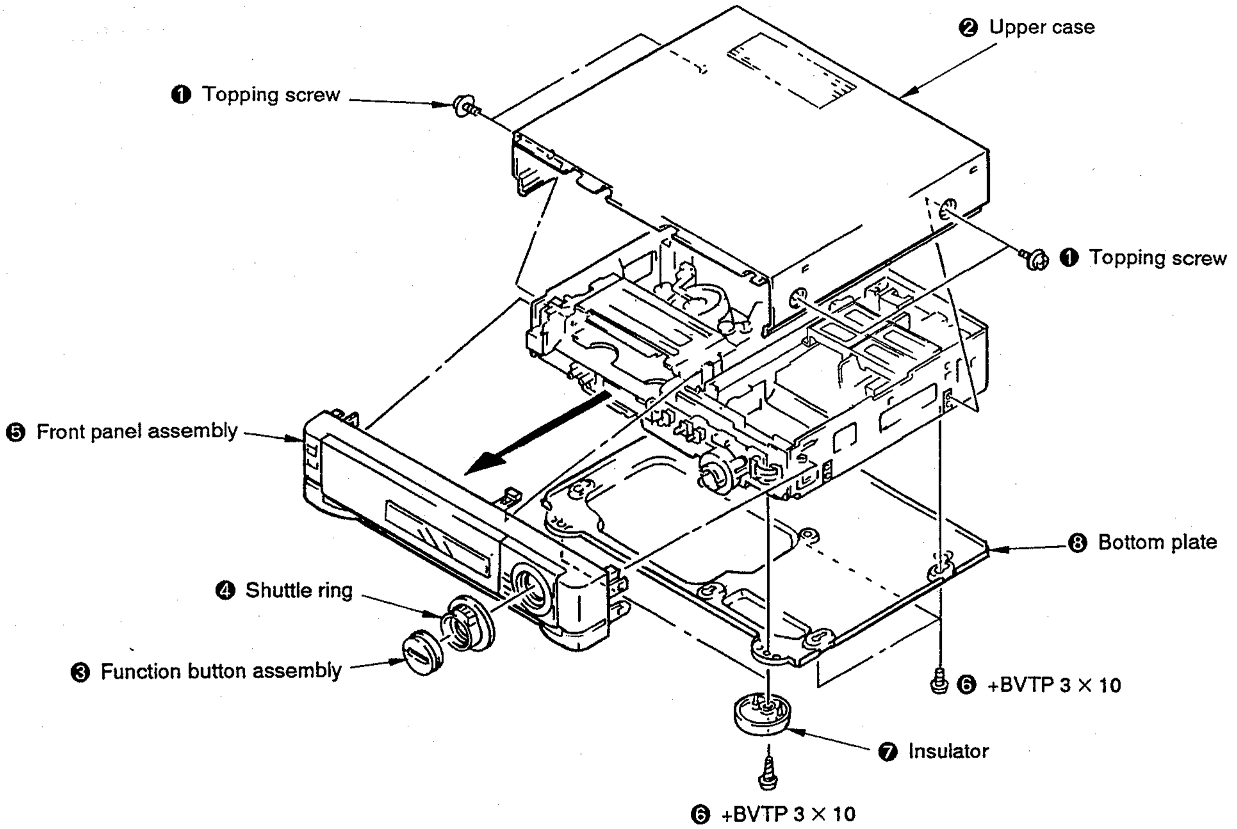
	Symptom	Possible causes and remedies
Recording and Playback	The picture moves vertically during picture search mode.	• Adjust the vertical hold control on the TV or color monitor.
	The sound drops out.	• The cassette is defective. Use a new video cassette.
	Stereo recording cannot be made.	• AUTO STEREO is set to "OFF" in the SET UP MENU.
	Both main and SAP sounds are heard when playing back a cassette on which an MTS broadcast was recorded.	• AUDIO MIX is set to "ON" in the SET UP MENU.
	No sound is recorded on the normal audio track.	• NORMAL AUDIO is set to "SAP" in the SET UP MENU when there is no SAP broadcast.
Timer Recording	Timer setting cannot be made.	• The current time has not been preset.
	The TIMER REC (recording) indicator is not lit even though you've pressed TIMER REC (ON/OFF).	• No cassette has been inserted. • The cassette is at its end. • No setting for timer-recording has been made.
	The cassette is ejected when you press TIMER REC (ON/OFF).	• The safety tab of the cassette has been removed.
	Timer recording was not made.	• There has been a power interruption of one hour or more. • TIMER REC (ON/OFF) was not pressed. • CABLE BOX CONTROL setup was not done or was done incorrectly. • The cable box was not turned on when recording started. • The cable box is not receiving the control signal from the VCR. Reposition the cable box away from the VCR. Make sure that the Cable Mouse is attached as shown on page 8.
Display	The display does not appear on *the screen.*	• Press DISPLAY.
Others	Cassette cannot be inserted.	• A cassette has already been inserted.
	The Remote Commander cannot be operated.	• The batteries are low.
	The tracking indicator does not appear on the screen.	• The recording condition of the cassette is very poor and tracking cannot be adjusted.
	The channels on the VCR cannot be changed.	• The CABLE BOX CONTROL is set to "ON." Set the CABLE BOX CONTROL to "OFF."

SECTION 2

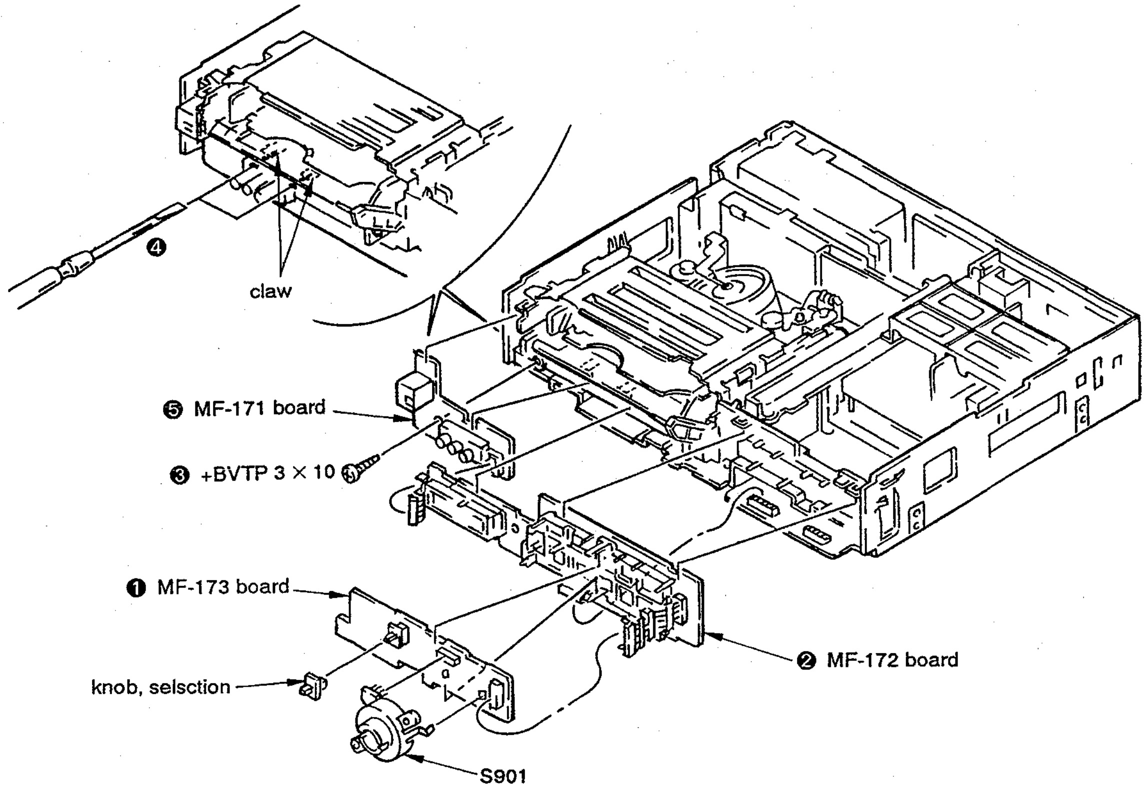
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

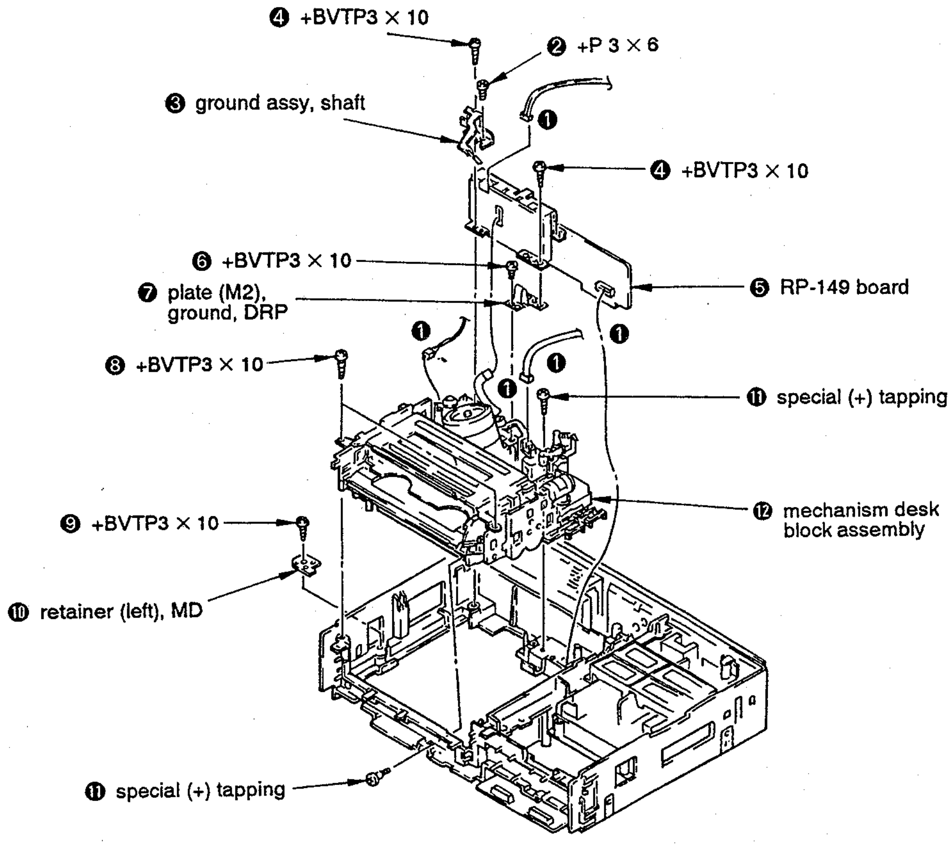
2-1. FRONT PANEL AND CABINET ASSEMBLIES


❷ Upper case
❶ Topping screw
❶ Topping screw
❺ Front panel assembly
❽ Bottom plate
❹ Shuttle ring
❸ Function button assembly
❻ +BVTP 3 × 10
❼ Insulator
❻ +BVTP 3 × 10

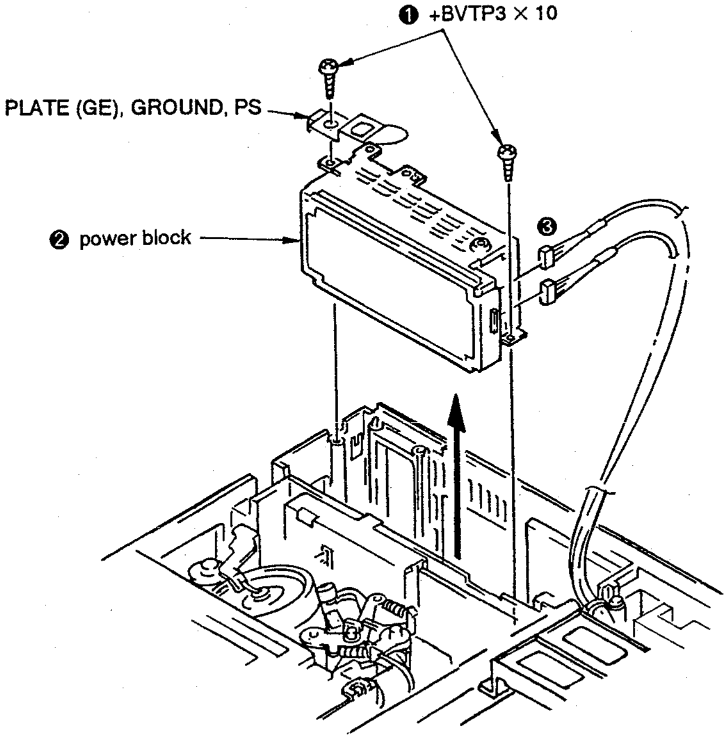
2-2. MF-171, MF-172, MF-173 BOARD


❹
claw
❺ MF-171 board
❸ +BVTP 3 × 10
❶ MF-173 board
knob, selsction
❷ MF-172 board
S901

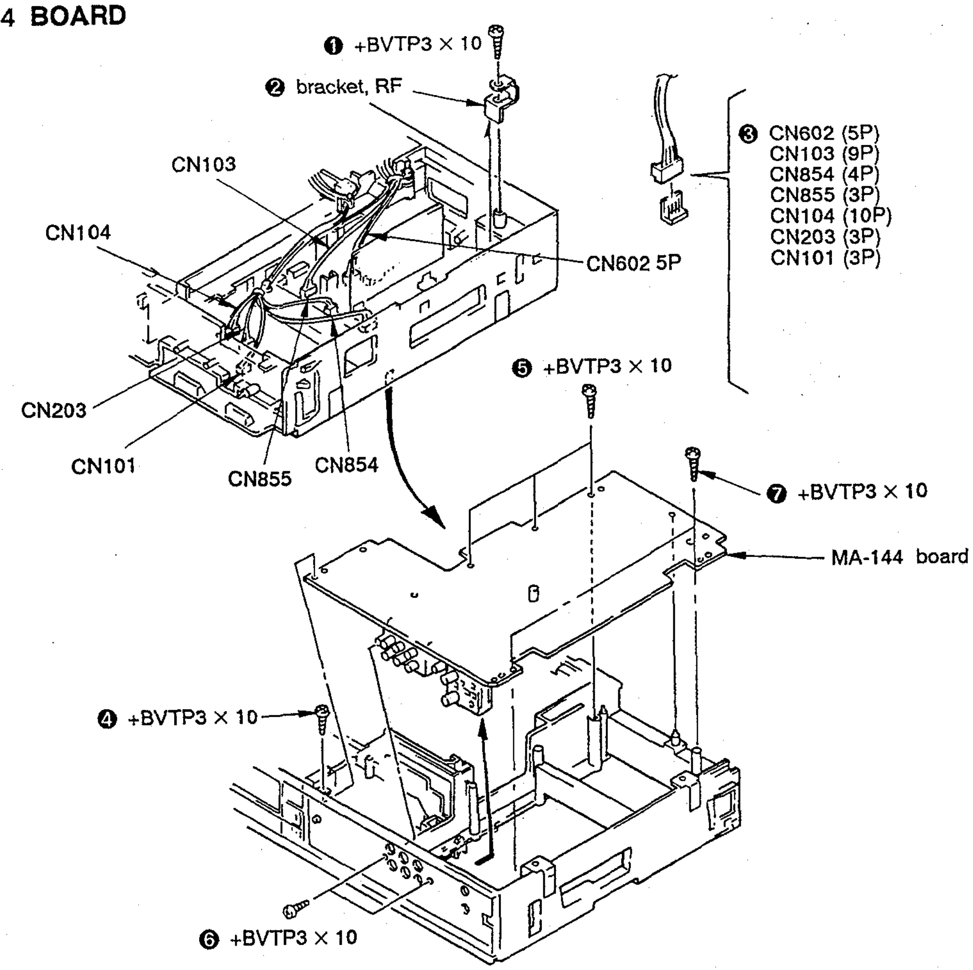
2-3. RP-149 BOARD AND MECHANISM DECK BLOCK ASSSEMBLY


❹ +BVTP3 × 10
❷ +P 3 × 6
❸ ground assy, shaft
❶
❹ +BVTP3 × 10
❻ +BVTP3 × 10
❺ RP-149 board
❼ plate (M2), ground, DRP
❶
❶
❽ +BVTP3 × 10
❶
❶
⓫ special (+) tapping
❾ +BVTP3 × 10
⓬ mechanism desk block assembly
❿ retainer (left), MD
⓫ special (+) tapping

2-4. POWER BLOCK

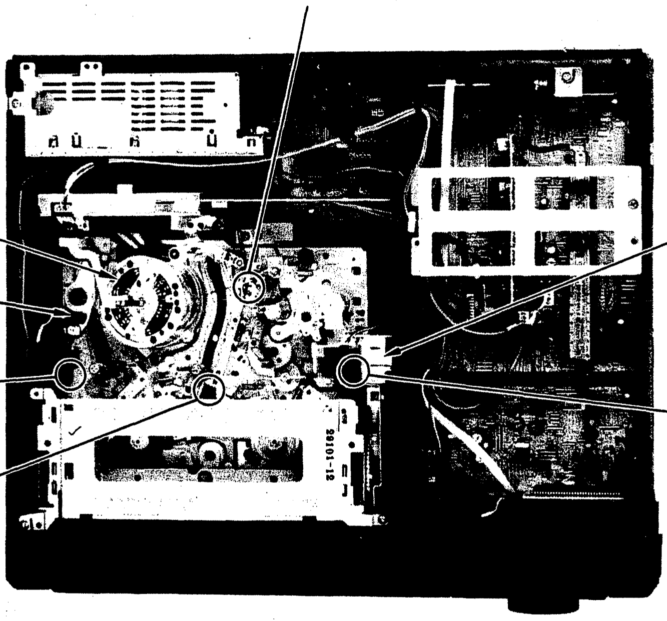

❶ +BVTP3 × 10
PLATE (GE), GROUND, PS
❷ power block
❸

2-5. MA-144 BOARD


❶ +BVTP3 × 10
❷ bracket, RF
❸ CN602 (5P)
CN103 (9P)
CN854 (4P)
CN855 (3P)
CN104 (10P)
CN203 (3P)
CN101 (3P)
CN103
CN104
CN602 5P
CN203
CN101
CN855
CN854
❺ +BVTP3 × 10
❼ +BVTP3 × 10
MA-144 board
❹ +BVTP3 × 10
❻ +BVTP3 × 10

2-6. INTERNAL VIEWS

– Top Side –



ACE head block ass'y
A-6761-129-A

drum ass'y
DZH-49A-R 8-848-580-11 (900HF)
DZH-50A-R 8-848-582-11 (750HF/751HF)
upper drum ass'y
DZR-49-R 8-848-581-11 (900HF)
DZR-50-R 8-848-583-11 (750HF/751HF)

M904
loading motor
X-3727-784-1

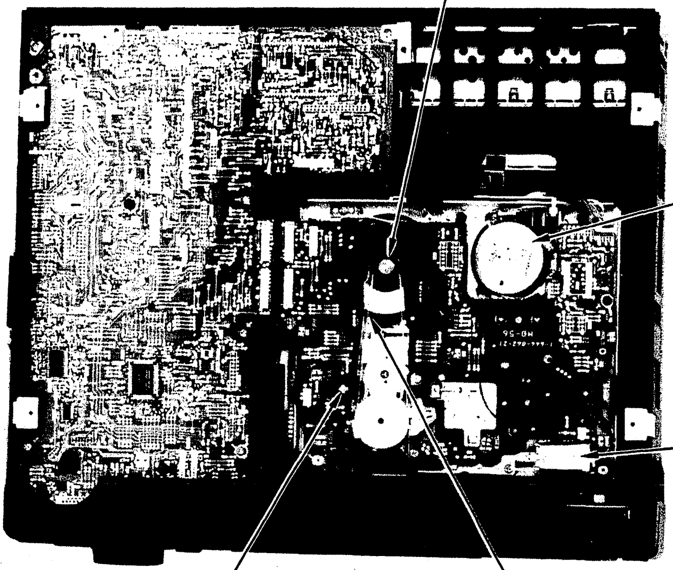
FE head
1-543-647-11

Q002
tape end sensor
8-729-926-31

Q001
tape top sensor
8-729-926-31

D001
tape top/end LED
8-719-985-00

– Bottom Side –



M902
capstan motor
8-835-489-11

M901
drum motor

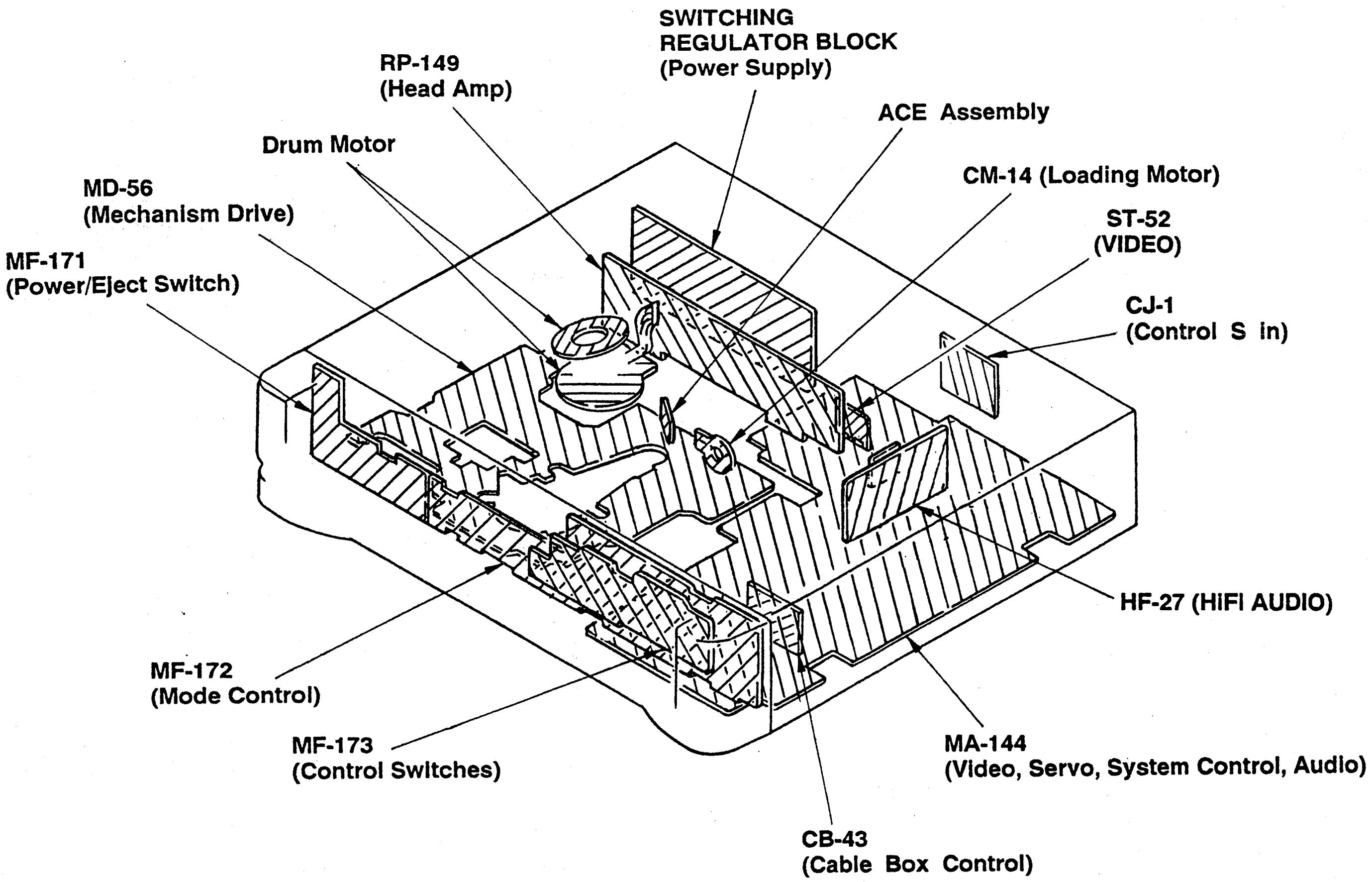
M903
cam motor
X-3733-302-1

S1
rotary switch
1-692-062-11

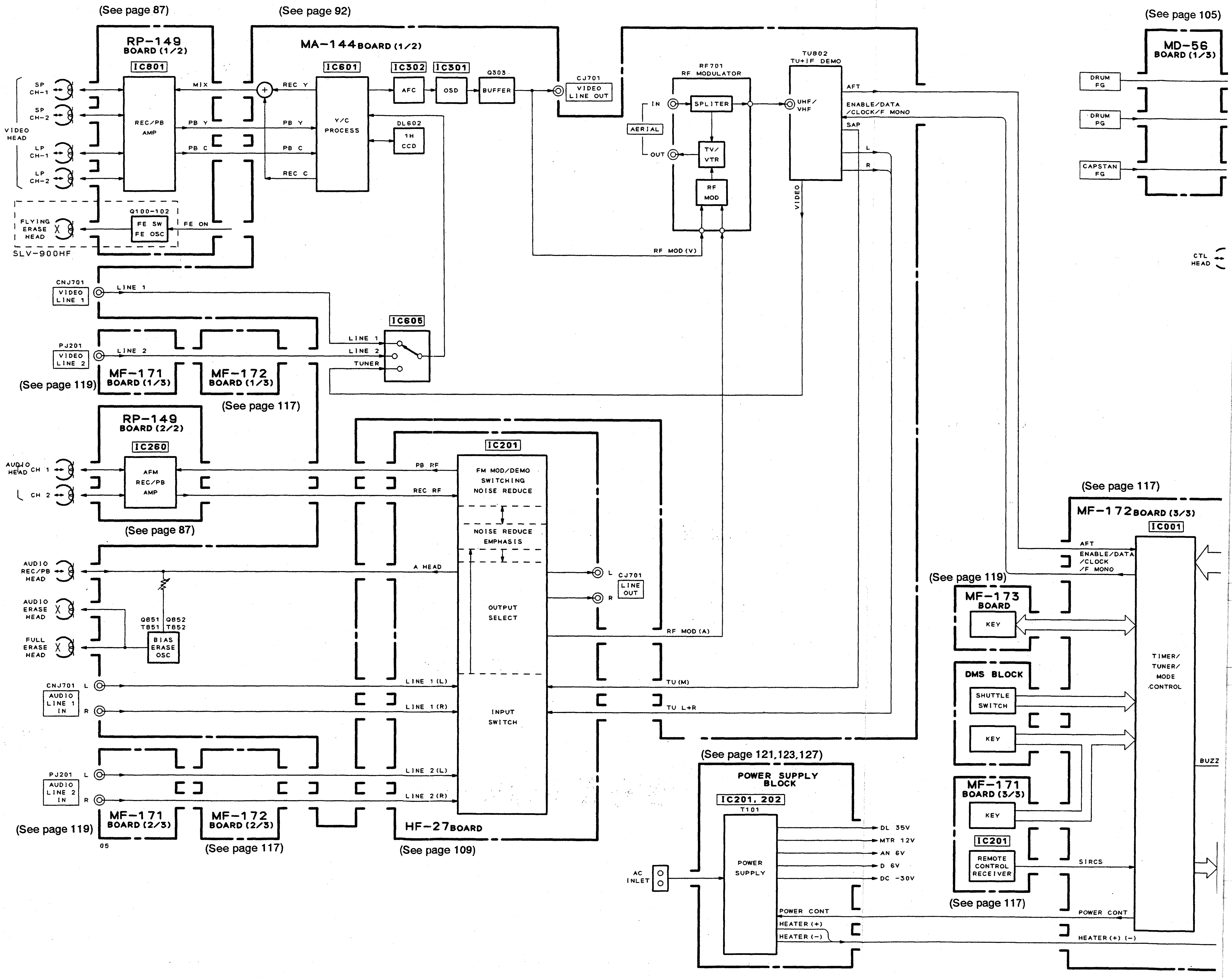
timing belt
3-376-013-01

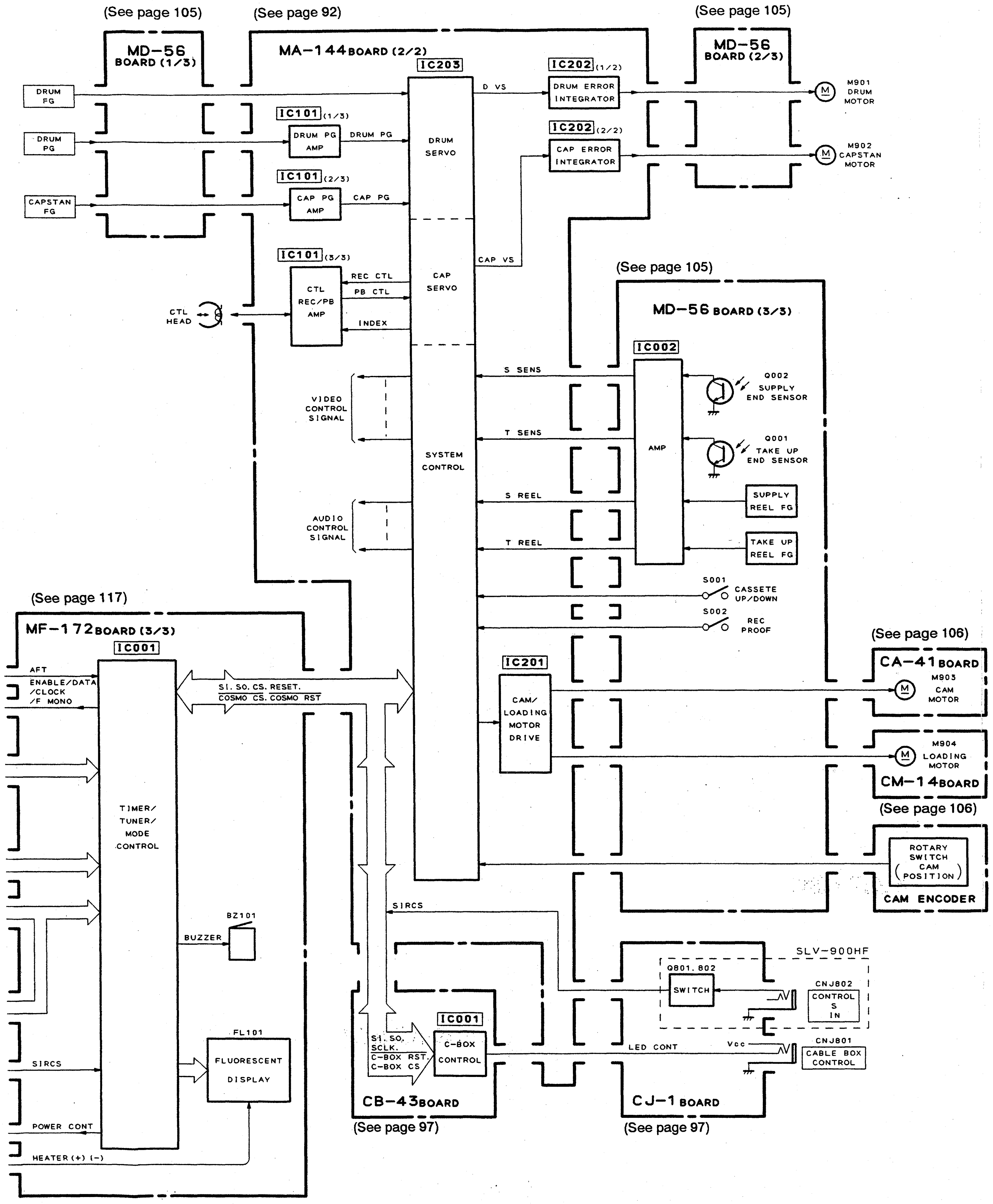
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

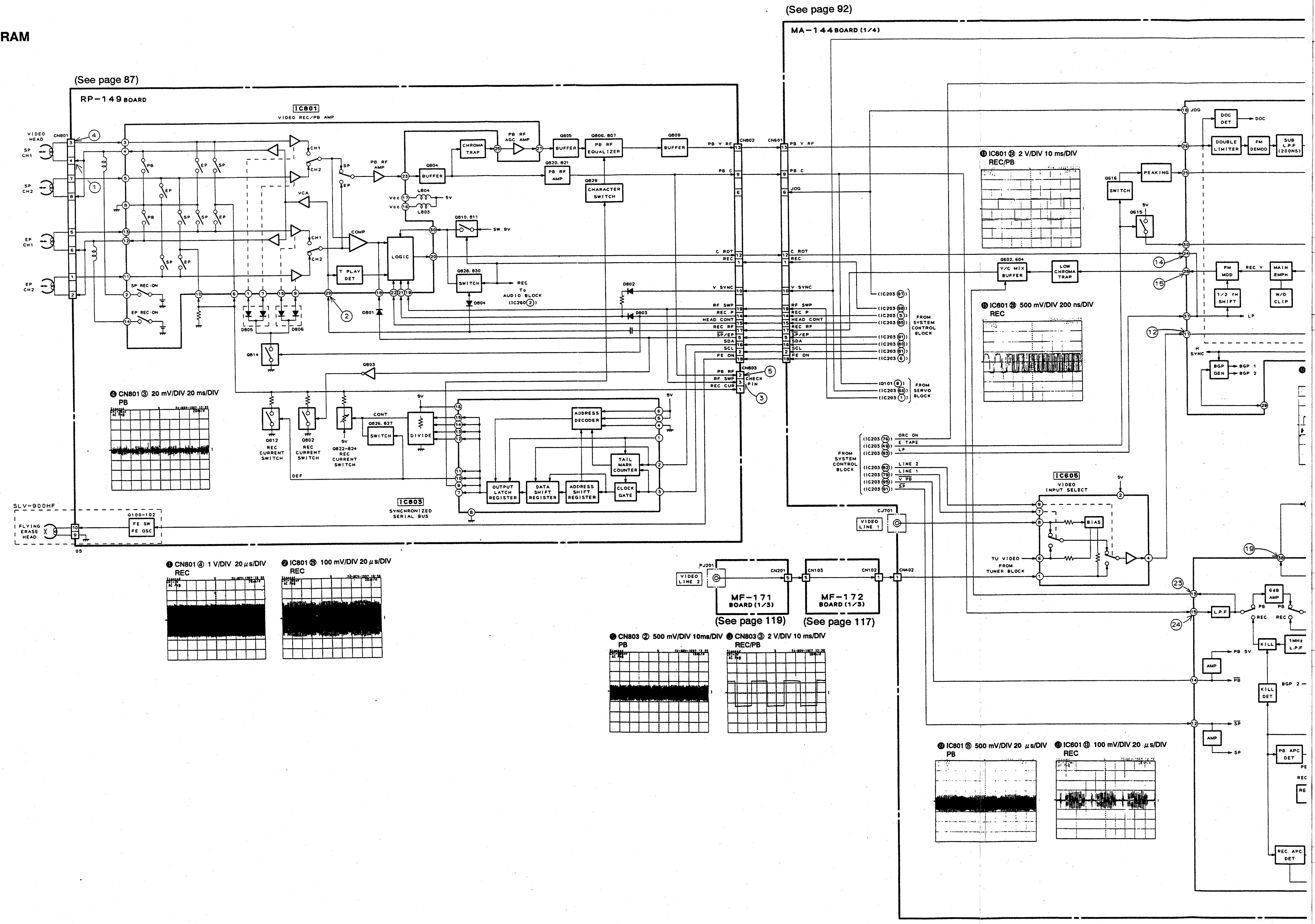

SWITCHING
REGULATOR BLOCK
(Power Supply)
RP-149
(Head Amp)
ACE Assembly
Drum Motor
CM-14 (Loading Motor)
MD-56
(Mechanism Drive)
ST-52
(VIDEO)
MF-171
(Power/Eject Switch)
CJ-1
(Control S In)
HF-27 (HIFI AUDIO)
MF-172
(Mode Control)
MF-173
(Control Switches)
MA-144
(Video, Servo, System Control, Audio)
CB-43
(Cable Box Control)

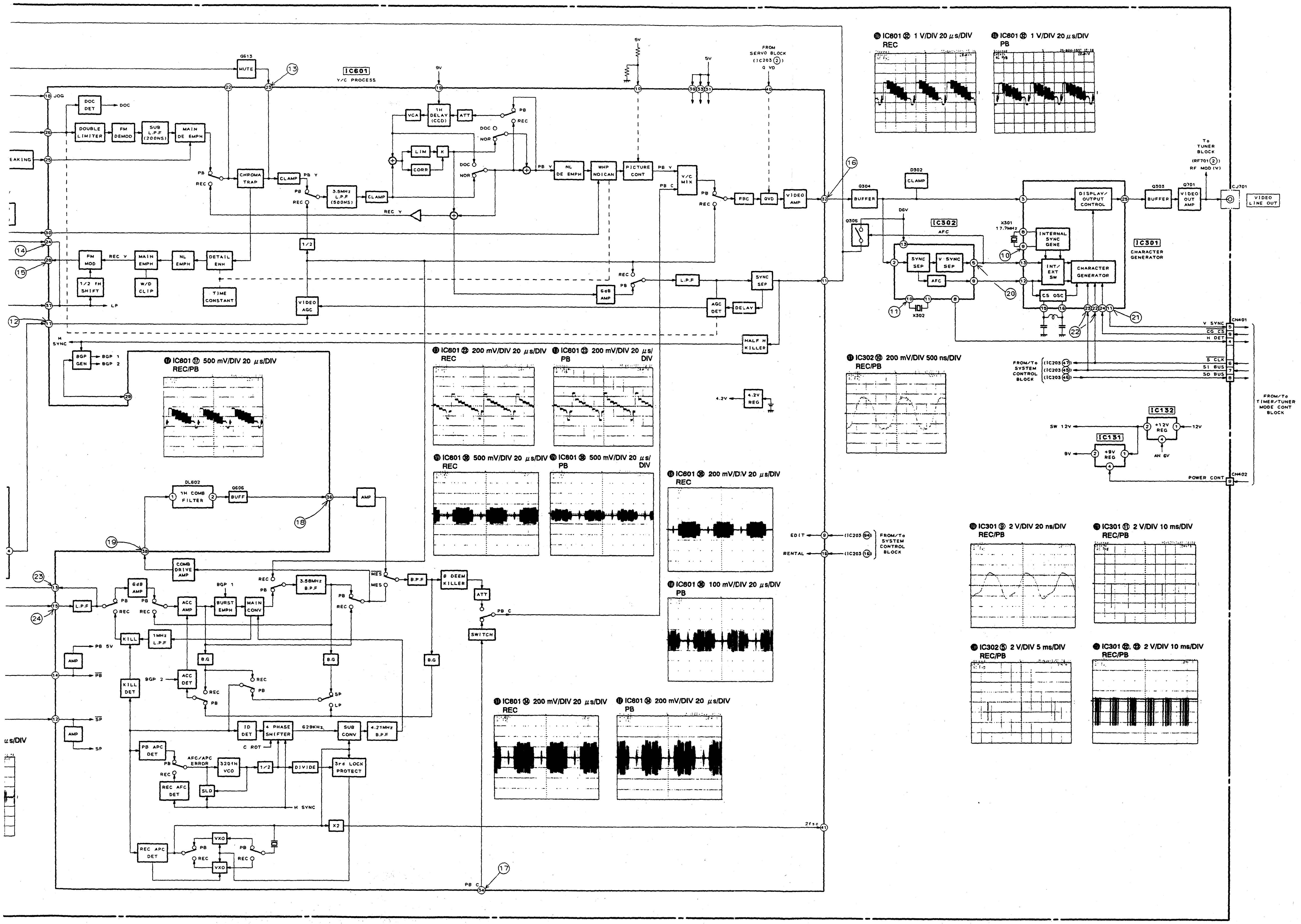
3-2. OVERALL BLOCK DIAGRAM


(See page 87)
RP-149 BOARD (1/2)
IC801
REC/PB AMP
SP CH-1
SP CH-2
VIDEO HEAD
LP CH-1
LP CH-2
MIX
PB Y
PB C
FLYING ERASE HEAD
Q100-102
FE SW
FE OSC
FE ON
SLV-900HF
(See page 92)
MA-144 BOARD (1/2)
REC Y
IC601
Y/C PROCESS
REC C
IC302
AFC
IC301
OSD
Q303
BUFFER
DL602
1H CCD
CJ701
VIDEO LINE OUT
RF701
RF MODULATOR
IN
AERIAL
OUT
SPLITER
TV/VTR
RF MOD
RF MOD (V)
TU802
TU+IF DEMO
UHF/VHF
AFT
ENABLE/DATA /CLOCK/F MONO
SAP
L
R
VIDEO
CNJ701
VIDEO LINE 1
LINE 1
IC605
LINE 1
LINE 2
TUNER
PJ201
VIDEO LINE 2
LINE 2
(See page 119)
MF-171 BOARD (1/3)
MF-172 BOARD (1/3)
(See page 117)
RP-149 BOARD (2/2)
IC260
AFM REC/PB AMP
AUDIO HEAD
CH 1
CH 2
(See page 87)
IC201
FM MOD/DEMO SWITCHING NOISE REDUCE
PB RF
REC RF
NOISE REDUCE EMPHASIS
AUDIO REC/PB HEAD
A HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
Q851 Q852
T851 T852
BIAS ERASE OSC
OUTPUT SELECT
CJ701
LINE OUT
L
R
RF MOD (A)
CNJ701
AUDIO LINE 1 IN
L
R
LINE 1 (L)
LINE 1 (R)
INPUT SWITCH
TU (M)
TU L+R
PJ201
AUDIO LINE 2 IN
L
R
LINE 2 (L)
LINE 2 (R)
(See page 119)
MF-171 BOARD (2/3)
05
MF-172 BOARD (2/3)
(See page 117)
HF-27 BOARD
(See page 109)
(See page 121,123,127)
POWER SUPPLY BLOCK
IC201, 202
T101
POWER SUPPLY
AC INLET
DL 35V
MTR 12V
AN 6V
D 6V
DC -30V
POWER CONT
HEATER (+)
HEATER (−)
(See page 105)
MD-56 BOARD (1/3)
DRUM FG
DRUM PG
CAPSTAN FG
CTL HEAD
(See page 117)
MF-172 BOARD (3/3)
IC001
AFT
ENABLE/DATA /CLOCK /F MONO
TIMER/ TUNER/ MODE CONTROL
(See page 119)
MF-173 BOARD
KEY
DMS BLOCK
SHUTTLE SWITCH
KEY
MF-171 BOARD (3/3)
KEY
IC201
REMOTE CONTROL RECEIVER
(See page 117)
SIRCS
BUZZ
POWER CONT
HEATER (+) (−)


(See page 105)
MD-56 BOARD (1/3)
(See page 92)
MA-144 BOARD (2/2)
IC203
(See page 105)
MD-56 BOARD (2/3)
DRUM FG
DRUM PG
CAPSTAN FG
IC101 (1/3)
DRUM PG AMP
DRUM PG
IC101 (2/3)
CAP PG AMP
CAP PG
IC101 (3/3)
CTL REC/PB AMP
REC CTL
PB CTL
INDEX
CTL HEAD
DRUM SERVO
CAP SERVO
SYSTEM CONTROL
D VS
CAP VS
IC202 (1/2)
DRUM ERROR INTEGRATOR
IC202 (2/2)
CAP ERROR INTEGRATOR
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
VIDEO CONTROL SIGNAL
AUDIO CONTROL SIGNAL
(See page 105)
MD-56 BOARD (3/3)
IC002
AMP
S SENS
T SENS
S REEL
T REEL
Q002 SUPPLY END SENSOR
Q001 TAKE UP END SENSOR
SUPPLY REEL FG
TAKE UP REEL FG
S001 CASSETE UP/DOWN
S002 REC PROOF
IC201
CAM/LOADING MOTOR DRIVE
(See page 106)
CA-41 BOARD
M903 CAM MOTOR
M904 LOADING MOTOR
CM-14 BOARD
(See page 106)
ROTARY SWITCH (CAM POSITION)
CAM ENCODER
(See page 117)
MF-172 BOARD (3/3)
IC001
AFT
ENABLE/DATA /CLOCK /F MONO
SI. SO. CS. RESET.
COSMO CS. COSMO RST
TIMER/ TUNER/ MODE CONTROL
BZ101
BUZZER
FL101
FLUORESCENT DISPLAY
SIRCS
POWER CONT
HEATER (+) (-)
SIRCS
IC001
C-BOX CONTROL
SI. SO. SCLK. C-BOX RST. C-BOX CS
CB-43 BOARD
(See page 97)
SLV-900HF
Q801. 802
SWITCH
CNJ802
CONTROL S IN
CNJ801
CABLE BOX CONTROL
LED CONT
Vcc
CJ-1 BOARD
(See page 97)

3-3. VIDEO BLOCK DIAGRAM


(See page 87)
RP-149 BOARD
IC801
VIDEO REC/PB AMP
VIDEO HEAD
SP CH1
SP CH2
EP CH1
EP CH2
CN801
PB
EP
SP
VCA
CH1
CH2
SP REC·ON
EP REC·ON
COMP
T PLAY DET
LOGIC
PB RF AMP
CHROMA TRAP
PB RF AGC AMP
Q804
BUFFER
Q805
BUFFER
Q806, 807
PB RF EQUALIZER
Q809
BUFFER
Q820, 821
PB RF AMP
Q829
CHARACTER SWITCH
L804
L803
Vcc
5V
Q810, 811
SW 9V
Q828, 830
SWITCH
REC
To AUDIO BLOCK
(IC260②)
D804
D802
D803
D801
D805
D806
Q814
Q803
Q812
REC CURRENT SWITCH
Q802
REC CURRENT SWITCH
Q822–824
REC CURRENT SWITCH
CONT
Q826, 827
SWITCH
DIVIDE
DEF
ADDRESS DECODER
TAIL MARK COUNTER
OUTPUT LATCH REGISTER
DATA SHIFT REGISTER
ADDRESS SHIFT REGISTER
CLOCK GATE
IC803
SYNCHRONIZED SERIAL BUS
SLV-900HF
FLYING ERASE HEAD
Q100–102
FE SW
FE OSC
CN802
PB Y RF
PB C
C ROT
REC
V SYNC
RF SWP
REC P
HEAD CONT
REC RF
SP/EP
SDA
SCL
FE ON
CN803
PB RF
RF SWP
REC CUR
CHECK PIN
④ CN801 ③ 20 mV/DIV 20 ms/DIV
PB
① CN801 ④ 1 V/DIV 20 μs/DIV
REC
② IC801 ㉙ 100 mV/DIV 20 μs/DIV
REC
⑤ CN803 ② 500 mV/DIV 10ms/DIV
PB
③ CN803 ③ 2 V/DIV 10 ms/DIV
REC/PB
(See page 92)
MA-144 BOARD (1/4)
CN601
JOG
DOC DET
DOC
DOUBLE LIMITER
FM DEMOD
SUB L.P.F (200NS)
⑬ IC601 ㉔ 2 V/DIV 10 ms/DIV
REC/PB
PEAKING
Q616
SWITCH
Q615
⑮ IC601 ㉘ 500 mV/DIV 200 ns/DIV
REC
Q602, 604
Y/C MIX BUFFER
LOW CHROMA TRAP
FM MOD
REC Y
MAIN EMPH
1/2 fH SHIFT
W/D CLIP
LP
H SYNC
BGP GEN
BGP 1
BGP 2
(IC203 ㊲)
(IC203 ㊳)
(IC203 ⑤)
(IC203 ㊱)
(IC203 ㊶)
(IC203 ㊵)
(IC203 ㊶)
(IC203 ⑥)
FROM SYSTEM CONTROL BLOCK
(D101 ⑧)
(IC203 ㊾)
(IC203 ①)
FROM SERVO BLOCK
(IC203 ㊻)
(IC203 ㊾)
(IC203 ㊸)
ORC ON
E TAPE
LP
FROM SYSTEM CONTROL BLOCK
(IC203 ㊷)
(IC203 ㊹)
(IC203 ㊺)
(IC203 ㊶)
LINE 2
LINE 1
V PB
SP
IC605
VIDEO INPUT SELECT
BIAS
TU VIDEO FROM TUNER BLOCK
CJ701
VIDEO LINE 1
PJ201
VIDEO LINE 2
CN201
MF-171 BOARD (1/3)
(See page 119)
CN103
CN102
MF-172 BOARD (1/3)
(See page 117)
CN402
6dB AMP
L.P.F
PB
REC
KILL
1MHz L.P.F
PB 5V
AMP
KILL DET
BGP 2
PB APC DET
REC APC DET
⑳ IC601 ⑮ 500 mV/DIV 20 μs/DIV
PB
⑳ IC601 ⑬ 100 mV/DIV 20 μs/DIV
REC


IC601
Y/C PROCESS
Q613
MUTE
DOC DET
DOC
JOG
DOUBLE LIMITER
FM DEMOD
SUB L.P.F (200NS)
MAIN DE EMPH
CHROMA TRAP
CLAMP
3.5MHz L.P.F (500NS)
VCA
1H DELAY (CCD)
ATT
LIM
CORR
NL DE EMPH
WHP NOICAN
PICTURE CONT
Y/C MIX
FBC
OVD
VIDEO AMP
REC Y
FM MOD
MAIN EMPH
NL EMPH
DETAIL ENH
1/2 FH SHIFT
W/D CLIP
TIME CONSTANT
VIDEO AGC
6dB AMP
L.P.F
SYNC SEP
AGC DET
DELAY
HALF H KILLER
BGP GEN
BGP 1
BGP 2
H SYNC
FROM SERVO BLOCK (IC203 ②) Q VD
DL602
1H COMB FILTER
Q606
BUFF
AMP
COMB DRIVE AMP
6dB AMP
ACC AMP
BURST EMPH
MAIN CONV
3.58MHz B.P.F
B.P.F
B DEEM KILLER
ATT
SWITCH
1MHz L.P.F
KILL
KILL DET
ACC DET
B.G
ID DET
4 PHASE SHIFTER
629KHz
SUB CONV
4.21MHz B.P.F
C ROT
PB APC DET
AFC/APC ERROR
320fH VCO
1/2
DIVIDE
3rd LOCK PROTECT
REC AFC DET
SLD
X2
REC APC DET
VXO
2fsc
PB C
MES
Q304
BUFFER
Q302
CLAMP
Q306
IC302
AFC
SYNC SEP
V. SYNC SEP
X302
X301 17.7MHz
INTERNAL SYNC GENE
INT/EXT SW
CS OSC
DISPLAY/OUTPUT CONTROL
CHARACTER GENERATOR
IC301
CHARACTER GENERATOR
Q303
BUFFER
Q701
VIDEO OUT AMP
CJ701
VIDEO LINE OUT
To TUNER BLOCK (RF701 ②) RF MOD (V)
CN401
V SYNC
CG CS
H DET
S CLK
SI BUS
SO BUS
FROM/To SYSTEM CONTROL BLOCK (IC203 ㊼) (IC203 ㊽) (IC203 ㊾)
FROM/To TIMER/TUNER MODE CONT BLOCK
4.2V REG
IC132
+12V REG
SW 12V
12V
IC131
+9V REG
9V
AN 6V
POWER CONT
CN402
EDIT
RENTAL
(IC203 ㊿) (IC203 ⑯)
FROM/To SYSTEM CONTROL BLOCK
⑬ IC601 ㉜ 1 V/DIV 20 μs/DIV REC
⑬ IC601 ㉜ 1 V/DIV 20 μs/DIV PB
⑫ IC601 ⑰ 500 mV/DIV 20 μs/DIV REC/PB
⑬ IC601 ㉓ 200 mV/DIV 20 μs/DIV REC
⑬ IC601 ㉓ 200 mV/DIV 20 μs/DIV PB
⑬ IC601 ㊳ 500 mV/DIV 20 μs/DIV REC
⑬ IC601 ㊳ 500 mV/DIV 20 μs/DIV PB
⑬ IC601 ㊱ 200 mV/DIV 20 μs/DIV REC
⑬ IC601 ㊱ 100 mV/DIV 20 μs/DIV PB
⑰ IC601 ㉞ 200 mV/DIV 20 μs/DIV REC
⑰ IC601 ㉞ 200 mV/DIV 20 μs/DIV PB
⑪ IC302 ⑯ 200 mV/DIV 500 ns/DIV REC/PB
⑩ IC301 ⑨ 2 V/DIV 20 ns/DIV REC/PB
⑪ IC301 ⑪ 2 V/DIV 10 ms/DIV REC/PB
⑪ IC302 ⑤ 2 V/DIV 5 ms/DIV REC/PB
⑫ IC301 ㉒, ㉓ 2 V/DIV 10 ms/DIV REC/PB
μs/DIV

3-4. SYSTEM CONTROL – VIDEO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
$\overline{\text{V•PB}}$	MA-144 IC203 (95)	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-144 IC203 (85)	O	L	L	L	L	HI-Z (2.5 V)	*1	*10	*5	*5	L	L
RF SW P (SW30)	MA-144 IC203 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-144 IC203 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-144 IC203 (91)	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
EP	MA-144 IC203 (92)	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
LP	MA-144 IC203 (93)	O	*13	*13	*13	*7	*7	*7	*7	*7	*7	*13	*13
REC•P	MA-144 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-144 IC203 (98)	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-144 IC203 (66)	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
$\overline{\text{OSD MUTE}}$	MA-144 IC203 (71)	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
EDIT	MA-144 IC203 (94)	O	*11	*11	*11	*14	*14	*14	*14	*14	*14	*11	*11
E TAPE	MA-144 IC203 ㊾	O	H	H	H	*15	*15	*15	*15	*15	*15	H	H
RENTAL	MA-144 IC203 ⑨	O	L	L	L	*16	*16	*16	*16	*16	*16	L	L
NTSC/$\overline{\text{PAL}}$	MA-144 IC203 ㉗	O	*17	*17	*17	*18	*18	*18	*18	*18	*18	*17	*17
3.58NTSC	MA-144 IC203 ㉖	O	*19	*19	*19	*20	*20	*20	*20	*20	*20	*19	*19
3.58/4.43NTSC	MA-144 IC203 ㉕	O	*17	*17	*17	*21	*21	*21	*21	*21	*18	*17	*17
JOG	MA-144 IC203 (97)	O	L	L	L	L	H	H	H	H	H	L	L
SECAM	MA-144 IC203 ㉒	I/O	*22	*22	*23	*24	*24	*24	*24	*24	*24	*22	*22
MESECAM	MA-144 IC203 ㉑	I/O	*22	*22	*23	*23	*23	*23	*23	*23	*23	*22	*22
ORC SEttei	MA-144 IC203 (76)	O	L	L	L	L	L	L	L	L	L	*25	*25
$\overline{\text{ORC SEttei}}$	RP-149 IC803 ⑦	O	H	H	H	H	H	H	H	H	H	*26	*26
$\overline{\text{E TAPE}}$	RP-149 IC803 ⑨	O	L	L	L	*27	*27	*27	*27	*27	*27	L	L
ORC DEFAULT	RP-149 IC803 ⑩	O	*28	*28	*28	H	H	H	H	H	H	*28	*28
NTSC	RP-149 IC803 ⑪	O	*17	*17	*17	*18	*18	*18	*18	*18	*18	*17	*17

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).

*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.

*3. Normally "L". "H" when CTL signal is not generated.

*4. V period "H" pulse.

*5. "H" in SP mode. "L" in EP mode.

*6. Selected by REC mode. SP mode: "L".

*7. Selected by tape recording mode.

Signal \ Model	SP	LP	EP
$\overline{\text{SP}}$ (91)	L	H	H
EP (92)	L	L	H
LP (93)	L	H	L

*8. Composite Sync signal (positive).

*9. "L" when menu screen or blue back screen.

*10. "HI-Z (2.5 V)" in EP mode. "H" in SP mode.

*11. Selected by "PICTURE SW": "H" in EDIT position.

*12. Selected by REC mode: "H" EP mode.

*13. Selected by REC mode: "H" LP mode.

*14. Selected by "PICTURE SW": "H" in EDIT position. "H" when "E TAPE" is "H" (Euro model, PAL PB).

*15. "L" when APC is off. "H" when APC is ON and "HG tape" is used.

*16. Selected by "PICTURE SW" "H" in RENTAL position or "H" when Low grade tape is used in APC ON mode.

*17. "H" when input signal is NTSC mode (GA-PAL model) (Euro-PAL mode).
"H" when input signal is NTSC mode (NTSC model).

*18. Selected by "Color system SW": "H" in NTSC mode (GA-PAL, Euro-PAL model).
"H" (NTSC model).

*19. "H" when input signal is NTSC3.58 mode (GA-PAL model).
"L" (Euro-PAL, NTSC model).

*20. Selected by "NTPB SW": "H" in NTSC3.58 position.

*21. Selected by "NTPB SW": "H" in NTSC3.58 or 4.43 position.

*22. "L" when input signal is NTSC mode, "HI-Z" in PAL/SECAM/MESECAM mode (GA-PAL, Euro-PAL model).
"L" (NTSC model).

*23. Selected by "Color system SW": "L" in NTSC mode, "HI-Z" in PAL/SECAM/MESECAM mode.

*24. Selected by "Color System SW": "L" in NTSC mode or PAL/SECAM/MESECAM – LP mode.
"HI-Z" in (PAL/SECAM/MESECAM) – SP mode.

*25. "H" during APC measurement.

*26. "L" during APC measurement.

*27. "H" when APC is off. "L" when APC is ON and "HG-tape" is used.

*28. "H" when APC is off or APc measurement is not done.

3-5. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE	PB INDEX WRT/ERS
REC CTL	MA-144 IC203 ⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-144 IC203 ㊳	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	
STEP PLS	MA-144 IC203 ㉔	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-144 IC203 ㉘	O	L	L	L	L	L	L	L	L	L	L	L	H	H	H
INDEX	MA-144 IC203 ㉚	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
PB CTL	MA-144 IC203 (67)	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
VD CTL	MA-144 IC203 (77)	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
DRUM PG	MA-144 IC203 (68)	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRUM FG	MA-144 IC203 (69)	I	*4	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-144 IC203 (70)	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP RVS	MA-144 IC203 (72)	O	H/L	L	H	L	H	L	L	*2	L	L	H	L	L	
CAP DA	MA-144 IC203 (73)	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRUM DA	MA-144 IC203 (74)	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-144 IC203 ㉙	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction and STEP drive.

3-6. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

Signal	Pin No.	I/O	HI-SPEED REW	EJECTED	CASSETTE LOADING	CASSETTE UNLOAD-ING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE
CAM *1	MA-144 IC203 ⑫	O	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L
LOAD	MA-144 IC203 ⑭	O	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CW/CCW	MA-144 IC203 ⑬	O			H	L	H	L											
MODE 1	MA-144 IC203 (58)	I	H	L	L	L	H	H	L	H	H	H	L	L	H	H	H	H	L
MODE 2	MA-144 IC203 (57)	I	L	H	H	H	H	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-144 IC203 (56)	I	H	H	H	H	L	L	L	L	L	H	H	H	H	H	L	H	H
MODE 4	MA-144 IC203 (55)	I	H	H	H	H	H	H	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-144 IC203 ⑮	I	*2	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
C-UP/DOWN	MA-144 IC203 ⑯	I	L	H	H→L	L→H	L	L	L	L	L	L	L	L	L	L	L	L	L
TREEL FG	MA-144 IC203 (64)	I	*3	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-144 IC203 (63)	I	*3	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END LED	MA-144 IC203 ㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-144 IC203 ㉝	O (O.D)	*1							*1	*1			*6		*1	*1		
CAP TRQ 2	MA-144 IC203 ㉞	O (O.D)								*1	*1								
$\overline{\text{CAP STOP}}$	MA-144 IC203 ㊳	O (O.D)	H	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	MA-144 IC203 (72)	O	H	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
CAP DA	MA-144 IC203 (73)	O																	
T SENS	MA-144 IC203 ⑰	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-144 IC203 ⑱	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

3-7. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	I/O level
$\overline{\text{COSMO•RESET}}$	MA-144 IC203 ㊵	I	Normally "H". "L" when service interruption is detected or restored.
$\overline{\text{COSMO•CS}}$	MA-144 IC203 ㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
SI•BUS	MA-144 IC203 ㊺	I	Serial communication data from timer microprocessor. V period "L" pulse.
SO•BUS	MA-144 IC203 ㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
S CLK	MA-144 IC203 ㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

3-8. SYSTEM CONTROL – AUDIO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
AF PB	MA-144 IC203 (96)	O	L	L	L	H	H	H	H	H	H	H	L
STEREO/L/$\overline{\text{R}}$	MA-144 IC203 (84)	I/O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{HiFi}}$/M/N	MA-144 IC203 (83)	I/O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
AF ENVELOP	MA-144 IC203 (61)	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-144 IC203 ⑪	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-144 IC203 ㊲	O (O.D)	L	L	L	*4	H	H	H	H	H	L	L
$\overline{\text{SP}}$	MA-144 IC203 (91)	O	*2	*2	*2	*3	*3	*3	*3	*3	*2	*2	*2
NA REC•$\overline{\text{P}}$	MA-144 IC203 ⑩	O	L	L	L	L	L	L	L	L	L	H	L
AF REC•$\overline{\text{P}}$	MA-144 IC203 ④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-144 IC203 (100)	O	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
AF SW POSITION	MA-144 IC203 (51)	I	Input terminal for AF switching position adjustment.										
FULL $\overline{\text{ERS}}$	MA-144 IC203 ㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. Selected by audio monitor.

Signal \ Audio Monitor	STEREO OR MAIN, SUB, L, R	MAIN L	SUB R	(NORMAL)	HiFi MIX
STEREO/L/$\overline{\text{R}}$	H	M (HI-Z)	L	X	H
$\overline{\text{HiFi}}$/M/N	L	L	L	H	M (HI-Z)

*2. Selected by REC mode selector. SP mode: "L".

*3. Selected by tape recording mode. SP mode: "L".

*4. 30 Hz or 25 Hz, 50% duty pulse approx. 5 msec delayed from RF SW P.

3-9. SYSTEM CONTROL – TUNER BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
TAMUTE	MA-144 IC203 ㉓	O	Tuner audio mute output. "H" when not used channel is selected.

3-10. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
AV CONT	MA-144 IC203 ⑲	O	"L" when RF modulator through.
LINE 1	MA-144 IC203 (79)	O	*1. Input select control signal.
LINE 2	MA-144 IC203 (82)	O	

*1.

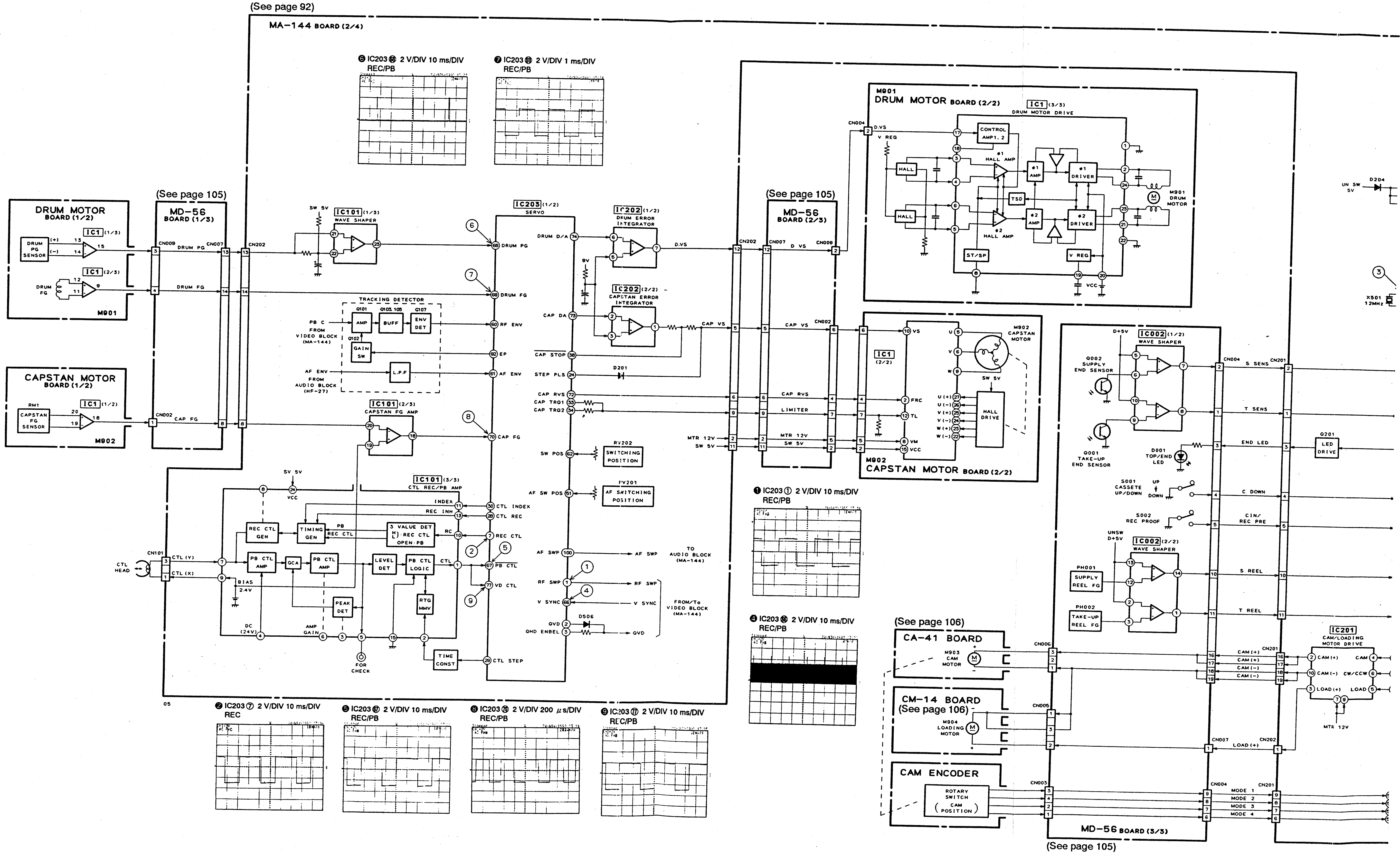
Signal \ Input	Tuner	LINE 1	LINE 2
LINE 1 (79)	L	H	L
LINE 2 (82)	L	L	H

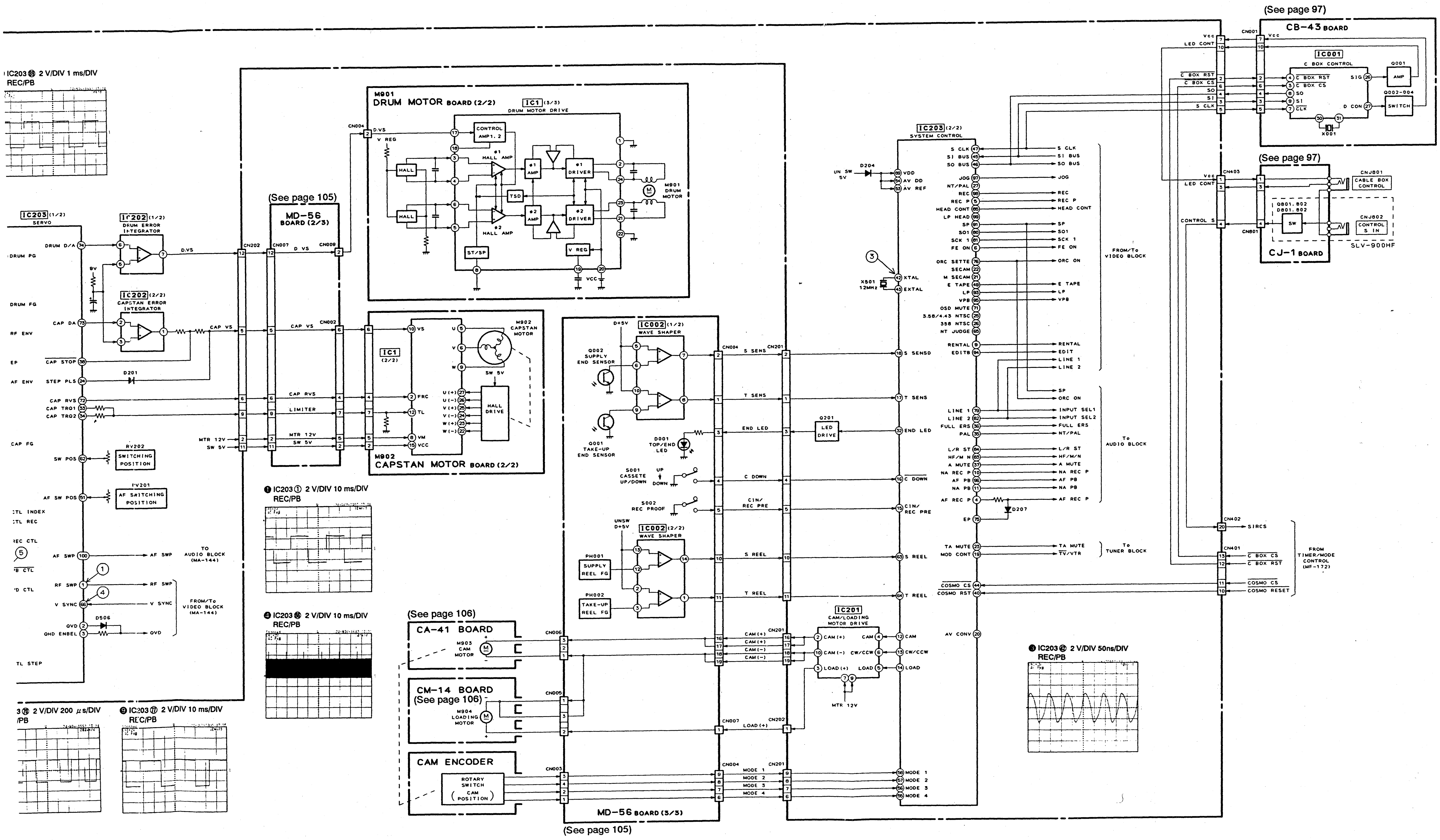
3-11. SERVO SYSTEM CONTROL – MICROPROCESSOR PIN FUNCTION (MA-144 BOARD IC203)

Pin No.	Port	I/O	Signal	Function
1	PB5/PPO13	O	RF SWP	Video switching pulse output
2	PB4/PPO12	O	Q VD	False VD pulse output
3	PB3/PPO11	O	Q HD ENBL	False HD voltage level control
4	PB2/PPO10	O	AF REC $\overline{\text{P}}$	"H" output when hi-fi audio REC
5	PB1/PPO9	O	RECP	"H" output when video REC•PAUSE
6	PB0/PPO8	O	FE ON	Flaying erase ON/OFF
7	PC7/RTO7	O	REC CTL	REC CTL output
8	PC6/RTO6	O	INT VD	Internal VD signal. Not used
9	PC5/RTO5	O	RENTAL	"H" output when "RENTAL" or "Low grade TAPE" PB
10	PC4/RTO4	O	NA REC$\overline{\text{P}}$	"H" when normal audio REC
11	PC3/RTO3	O	NA PB	"H" when normal audio playback
12	PC2/PPO18	O	CAM	CAM motor select
13	PC1/PPO17	O	CW	Clockwise/counterclockwise signal output
14	PC0/PPO16	O	LOAD	Load motor select
15	PJ7	I	CIN/REC PRF	Erasing protection tab, cassette IN detection input
16	PJ6	I	C DOWN	Cassette up/down detection input
17	PJ5	I	T SENS	T end sensor input
18	PJ4	I	S SENS	S end sensor input
19	PJ3	O	MOD CONT	RF modulator ON/OFF control
20	PJ2	O	AV CONT	Euro 21pin TV/VTR control
21	PJ1	I/O	MESECAM	"L" in NT mode. "HI-Z" in PAL (50 Hz) mode
22	PJ0	I/O	SECAM	"L" in NT mode. "HI-Z" in PAL (50 Hz) mode
23	PD7	O	TA MUTE	Tuner audio MUTE signal
24	PD6	O	STEP PLS	"H" when capstan step drive
25	PD5	O	3.58/4.43 NTSC	"H" when 3.58 or 4.43 NTSC PB
26	PD4	O	3.58 NTSC	"H" when 3.58 NTSC PB
27	PD3	O	NTSC/$\overline{\text{PAL}}$	"H" when NTSC mode
28	PD2	O	CTL REC	"H" when CTR writing
29	PD1	O	CTL STEP	STEP motion control of CTL amp
30	PD0	O	INDEX	Index control. "H" when playback index writing or erasing
31	PH7	O		Not used
32	PH6	O	END LED	END sensor lamp drive output
33	PH5	O	CAP TPQ2	Capstan current control. "L" when FF/REW ➡ stop
34	PH4	O	CAP TPQ1	Capstan current control. "L" when slow down
35	PH3	O	PAL	"H" when PAL mode
36	PH2	O	$\overline{\text{FULL ERS}}$	"L" when full erase head operation
37	PH1	O	A MUTE	Audio MUTE output
38	PH0	O	$\overline{\text{CAP STOP}}$	Capstan STOP signal output
39	MP	I	MP	Fixed at "L" level
40	$\overline{\text{RST}}$	I	$\overline{\text{COSMO RST}}$	System reset input
41	Vss			GND
42	XTAL		XTAL	System clock 12 MHz
43	EXTAL		EXTAL	
44	$\overline{\text{CS0}}$	I	$\overline{\text{COSMO CS}}$	Chip select signal
45	SI0	I	SI0	Signal for serial communication
46	SO0	O	SO0	
47	$\overline{\text{SCK0}}$	I	$\overline{\text{SCK0}}$	
48	PF7/AN11	O	AMS MUTE	Not used
49	PF6/AN10	O	E TAPE	"H" when "HG-TAPE" PB

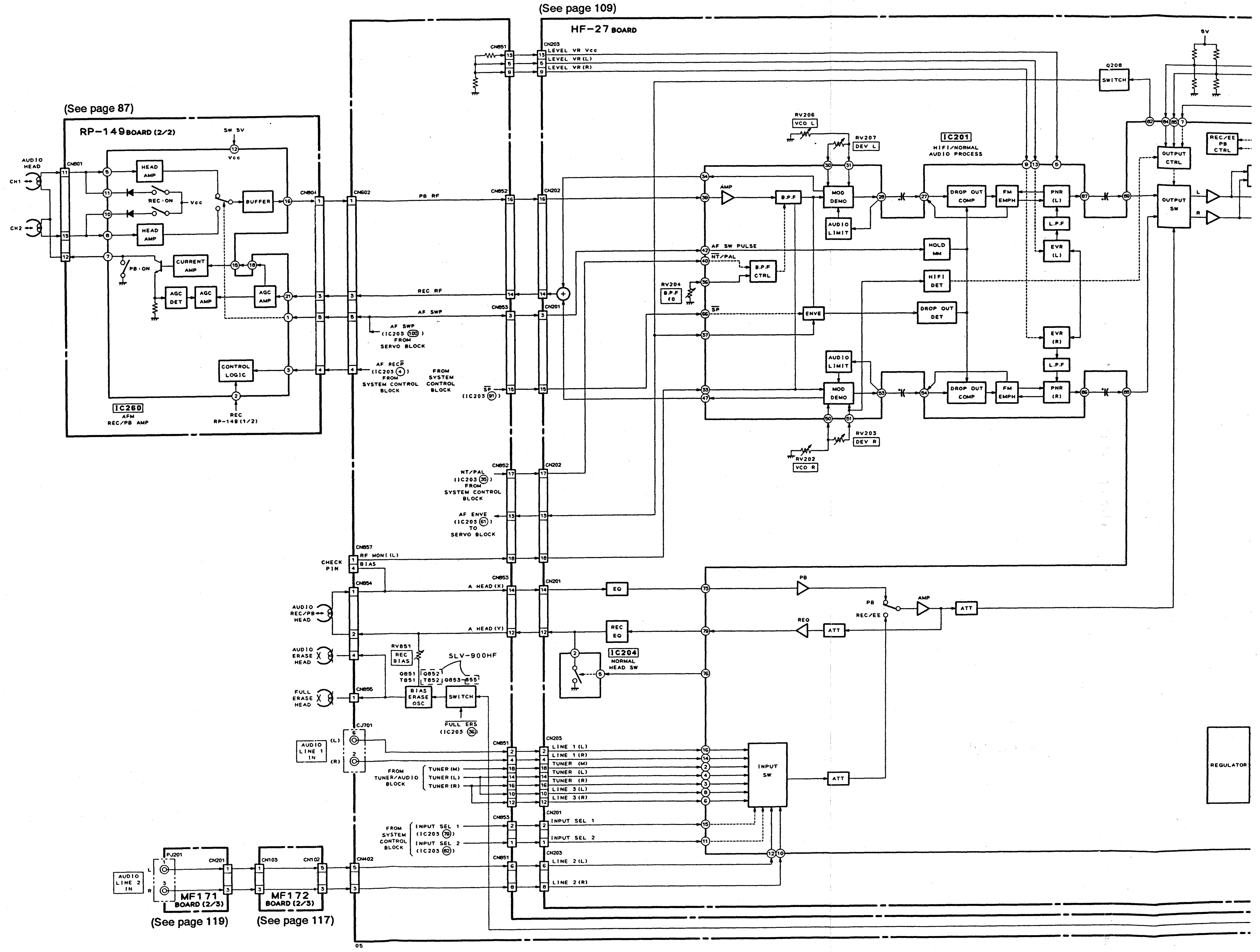
Pin No.	Port	I/O	Signal	Function
50	PF5/AN9	I	K MODE	Not used
51	PF4/AN8	I	AF SW POSI	VR input for hi-fi switching pulse position adjustment
52	AVss		AVss	GND
53	AVREF		AVREF	AD port reference input. UNSW 5 V
54	AVDD		AVDD	UNSW 5 V
55	PF3/AF7	I	MODE4	Mechanism section CAM encoder input
56	PF2/AN6	I	MODE3	
57	PF1/AN5	I	MODE2	
58	PF0/AN4	I	MODE1	
59	AN3	I	DEW	DEW sensor input
60	AN2	I	RF ENV	Video RF envelope input
61	AN1	I	AF ENV	hi-fi audio RF envelope input
62	AN0	I	RF SW POSI	VR input for SWP adjustment
63	PG7/EXI1	I	SREEL FG	S reel sensor input
64	PG6/EXI0	I	TREEL FG	T reel sensor input
65	PG5/SYNC1	I	NT JUDGE	3.58/4.43 NTSC judgement input
66	PG4/SYNC0	I	V SYNC	Composite sync input
67	PG3/$\overline{\text{PBCTL}}$	I	PB CTL	Playback CTL input
68	PG2/DPG	I	DRM PG	Drum PG input
69	PG1/DFG	I	DRM FG	Drum FG input
70	PG0/CFG	I	CAP FG	Capstan FG input
71	PE7/DAB1	O	OSD MUTE	Video putput mute signal
72	PE6/DAB0	O	CAP RVS	Capstan reverse signal output
73	PE5/DAA1	O	CAP D/A	Capstan error D/A output
74	PE4/DAA0	O	DRM D/A	Drum error D/A output
75	PE3/PWM1	O	$\overline{\text{EP}}$	"L" when EP mode REC/PB
76	PE2/PWM0	O	ORC SETTEI	"H" when ORC measurement
77	PE1/EC/INT	I	VD CTL	Playback CTL input
78	PE0/INTO	I	AMS IN	Not used
79	PI7/SIL	O	LINE1	Video/audio input select signal
80	PI6/SOL	O	EXP SO	Expansion port serial communication
81	PI5/$\overline{\text{SCKL}}$	O	EXP CLK	
82	PI4/INT1	O	LINE2	Video/audio input select signal
83	PI3/TO	I/O	Hi/$\overline{\text{Fi}}$/M/N	Audio output control signal
84	PI2/PWM	I/O	STEREO/L/$\overline{\text{R}}$	
85	PI1/PO	I/O	HEAD CONT	Head select control
86	TEX	I		Not used
87	TX	O		Not used
88	Vss			GND
89	VDD			UNSW 5 V
90	N.C.			Connected to UNSW 5 V
91	PA7/PPO7	O	$\overline{\text{SP}}$	"L" when SP mode
92	PA6/PPO6	O	ENV GAIN	RF envelope gain control
93	PA5/PPO5	O	LP	"H" when LP mode
94	PA4/PPO4	O	EDIT	"H" when EDIT
95	PA3/PPO3	O	$\overline{\text{V PB}}$	"L" when video playback
96	PA2/PPO2	O	AF PB	"H" when hi-fi audio playback
97	PA1/PPO1	O	JOG	"H" when trick play mode
98	PA0/PPO0	O	REC	Rise up signal of head amp recording power
99	PB7/PPO15	O	LP HEAD	(PAL) Head select control
100	PB6/PPO14	O	AF SWP	hi-fi switching pulse output

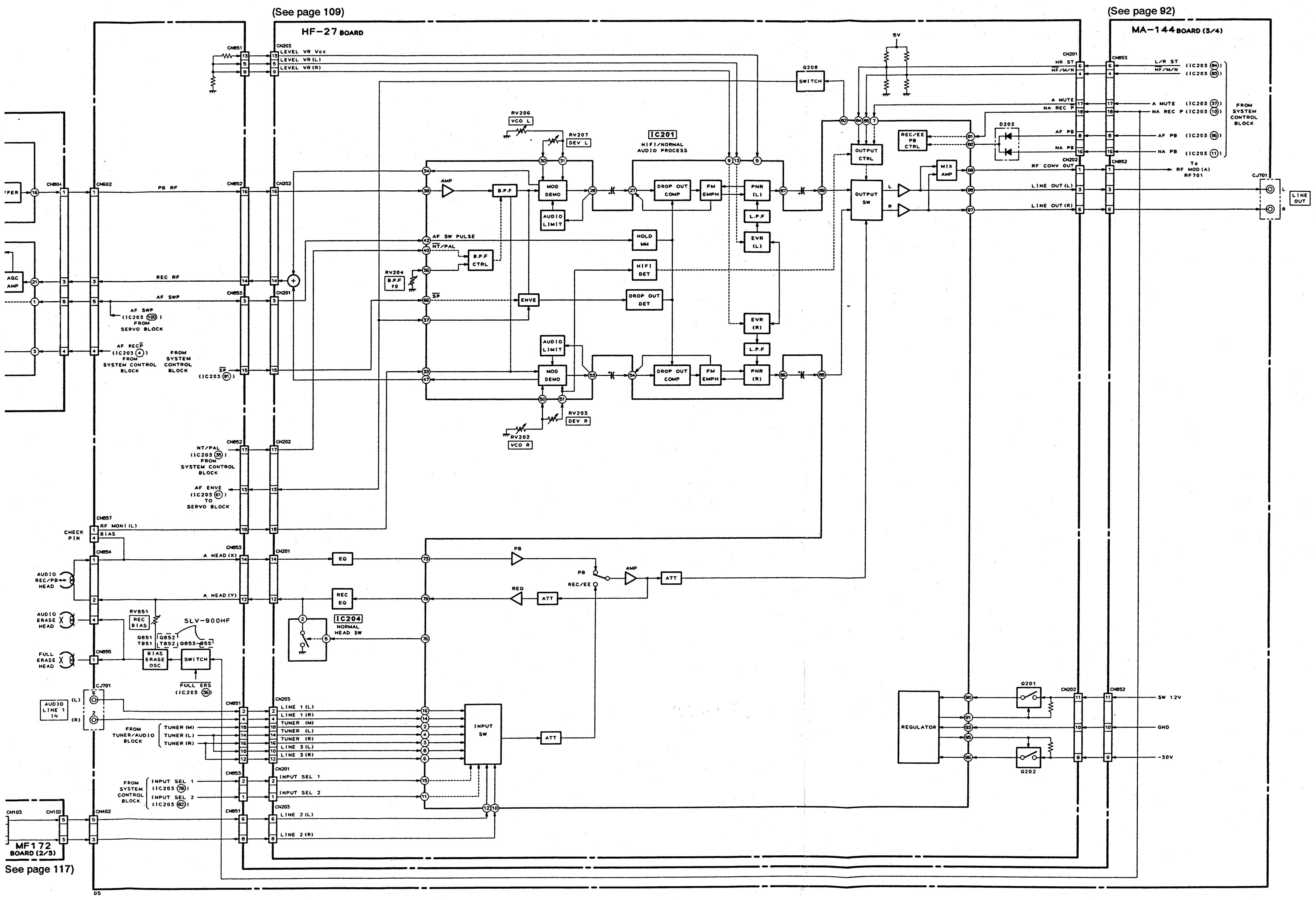
3-12. SERVO, SYSTEM CONTROL BLOCK DIAGRAM


(See page 92)
MA-144 BOARD (2/4)
❻ IC203 ㊳ 2 V/DIV 10 ms/DIV REC/PB
❼ IC203 ㊳ 2 V/DIV 1 ms/DIV REC/PB
DRUM MOTOR BOARD (1/2)
IC1 (1/3)
DRUM PG SENSOR
IC1 (2/3)
DRUM FG
M901
(See page 105)
MD-56 BOARD (1/3)
CN009
CN007
DRUM PG
DRUM FG
CN202
CAPSTAN MOTOR BOARD (1/2)
RM1
CAPSTAN FG SENSOR
IC1 (1/2)
M902
CN002
CAP FG
SW 5V
IC101 (1/3) WAVE SHAPER
IC203 (1/2) SERVO
DRUM PG
DRUM FG
TRACKING DETECTOR
Q101 Q103,105 Q107
AMP
BUFF
ENV DET
Q102
GAIN SW
PB C FROM VIDEO BLOCK (MA-144)
AF ENV FROM AUDIO BLOCK (HF-27)
L.P.F
RF ENV
EP
AF ENV
IC101 (2/3) CAPSTAN FG AMP
CAP FG
DRUM D/A
CAP DA
CAP STOP
STEP PLS
CAP RVS
CAP TRQ1
CAP TRQ2
SW POS
AF SW POS
AF SWP
RF SWP
V SYNC
OVD
OHD ENBEL
IC202 (1/2) DRUM ERROR INTEGRATOR
IC202 (2/2) CAPSTAN ERROR INTEGRATOR
8V
D.VS
CAP VS
D201
RV202 SWITCHING POSITION
RV201 AF SWITCHING POSITION
TO AUDIO BLOCK (MA-144)
AF SWP
RF SWP
V SYNC
FROM/TO VIDEO BLOCK (MA-144)
D506
OVD
MTR 12V
SW 5V
5V 5V
VCC
IC101 (3/3) CTL REC/PB AMP
INDEX
REC INH
PB
RC
REC CTL GEN
TIMING GEN
REC CTL
3 VALUE DET H/L: REC CTL OPEN: PB
CTL INDEX
CTL REC
REC CTL
CN101
CTL HEAD
CTL (Y)
CTL (X)
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
CTL
PB CTL
VD CTL
BIAS 2.4V
PEAK DET
RTG MMV
DC (24V)
AMP GAIN
FOR CHECK
TIME CONST
CTL STEP
❷ IC203 ⑦ 2 V/DIV 10 ms/DIV REC
❺ IC203 ㊼ 2 V/DIV 10 ms/DIV REC/PB
❽ IC203 ⑩ 2 V/DIV 200 μs/DIV REC/PB
❾ IC203 ㊼ 2 V/DIV 10 ms/DIV REC/PB
M901 DRUM MOTOR BOARD (2/2)
IC1 (3/3) DRUM MOTOR DRIVE
CN004
D.VS
V REG
CONTROL AMP1, 2
HALL
#1 HALL AMP
#1 AMP
#1 DRIVER
TSD
#2 HALL AMP
#2 AMP
#2 DRIVER
ST/SP
V REG
VCC
M901 DRUM MOTOR
(See page 105)
MD-56 BOARD (2/3)
CN007
CN009
D VS
CAP VS
CN002
CAP RVS
LIMITER
MTR 12V
SW 5V
IC1 (2/2)
VS
FRC
TL
VM
VCC
U(+) U(-) V(+) V(-) W(+) W(-)
HALL DRIVE
SW 5V
M902 CAPSTAN MOTOR
M902 CAPSTAN MOTOR BOARD (2/2)
❶ IC203 ① 2 V/DIV 10 ms/DIV REC/PB
❹ IC203 ㊳ 2 V/DIV 10 ms/DIV REC/PB
D+5V
IC002 (1/2) WAVE SHAPER
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
D001 TOP/END LED
S001 CASSETE UP/DOWN
UP
DOWN
S002 REC PROOF
UNSW D+5V
IC002 (2/2) WAVE SHAPER
PH001 SUPPLY REEL FG
PH002 TAKE-UP REEL FG
CN004
CN201
S SENS
T SENS
END LED
C DOWN
CIN/REC PRE
S REEL
T REEL
(See page 106)
CA-41 BOARD
CN006
M903 CAM MOTOR
CM-14 BOARD (See page 106)
CN005
M904 LOADING MOTOR
CAM ENCODER
CN003
ROTARY SWITCH (CAM POSITION)
CAM (+)
CAM (+)
CAM (-)
CAM (-)
CN007
CN202
LOAD (+)
MODE 1
MODE 2
MODE 3
MODE 4
MD-56 BOARD (3/3)
(See page 105)
IC201 CAM/LOADING MOTOR DRIVE
CAM (+)
CAM (-)
CW/CCW
LOAD (+)
LOAD
MTR 12V
Q201 LED DRIVE
UN SW 5V
D204
X501 12MHz


IC203 ⑱ 2 V/DIV 1 ms/DIV REC/PB
IC203 (1/2) SERVO
DRUM D/A
DRUM PG
DRUM FG
CAP DA
RF ENV
EP
CAP STOP
AF ENV
STEP PLS
CAP RVS
CAP TRQ1
CAP TRQ2
CAP FG
SW POS
AF SW POS
CTL INDEX
CTL REC
REC CTL
PB CTL
CD CTL
AF SWP
RF SWP
V SYNC
OVD
OHD ENBEL
CTL STEP
IC202 (1/2) DRUM ERROR INTEGRATOR
IC202 (2/2) CAPSTAN ERROR INTEGRATOR
D.VS
CAP VS
D201
RV202 SWITCHING POSITION
RV201 AF SWITCHING POSITION
To AUDIO BLOCK (MA-144)
FROM/To VIDEO BLOCK (MA-144)
D506
MTR 12V
SW 5V
CN202
(See page 105)
MD-56 BOARD (2/3)
CN007
CN009
CN002
LIMITER
M901 DRUM MOTOR BOARD (2/2)
IC1 (1/3) DRUM MOTOR DRIVE
CN004
V REG
CONTROL AMP1. 2
HALL
ø1 HALL AMP
ø1 AMP
ø1 DRIVER
ø2 AMP
ø2 DRIVER
ø2 HALL AMP
TSD
ST/SP
VCC
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
IC1 (2/2)
FRC
TL
VM
SW 5V
HALL DRIVE
M902 CAPSTAN MOTOR BOARD (2/2)
① IC203 ① 2 V/DIV 10 ms/DIV REC/PB
④ IC203 ㊿ 2 V/DIV 10 ms/DIV REC/PB
IC203 ⑱ 2 V/DIV 200 µs/DIV REC/PB
⑨ IC203 ⑰ 2 V/DIV 10 ms/DIV REC/PB
(See page 106)
CA-41 BOARD
M903 CAM MOTOR
CN006
CM-14 BOARD (See page 106)
M904 LOADING MOTOR
CN005
CAM ENCODER
CN003
ROTARY SWITCH (CAM POSITION)
MD-56 BOARD (3/3)
(See page 105)
IC002 (1/2) WAVE SHAPER
IC002 (2/2) WAVE SHAPER
D+5V
UNSW D+5V
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
D001 TOP/END LED
S001 CASSETE UP/DOWN
S002 REC PROOF
PH001 SUPPLY REEL FG
PH002 TAKE-UP REEL FG
S SENS
T SENS
END LED
C DOWN
CIN/ REC PRE
S REEL
T REEL
CAM (+)
CAM (-)
LOAD (+)
MODE 1
MODE 2
MODE 3
MODE 4
CN201
Q201 LED DRIVE
IC201 CAM/LOADING MOTOR DRIVE
CAM
CW/CCW
LOAD
MTR 12V
IC203 (2/2) SYSTEM CONTROL
UN SW 5V
D204
VDD
AV DD
AV REF
X501 12MHz
XTAL
EXTAL
S CLK
SI BUS
SO BUS
JOG
NT/PAL
REC
REC P
HEAD CONT
LP HEAD
SP
SO1
SCK 1
FE ON
ORC SETTE
SECAM
M SECAM
E TAPE
LP
VPB
OSD MUTE
3.58/4.43 NTSC
358 NTSC
NT JUDGE
RENTAL
EDITB
EDIT
LINE 1
LINE 2
ORC ON
INPUT SEL1
INPUT SEL2
FULL ERS
PAL
L/R ST
HF/M N
A MUTE
NA REC P
AF PB
NA PB
AF REC P
D207
EP
TA MUTE
MOD CONT
TV/VTR
COSMO CS
COSMO RST
AV CONV
FROM/To VIDEO BLOCK
To AUDIO BLOCK
To TUNER BLOCK
SIRCS
C BOX CS
C BOX RST
COSMO RESET
FROM TIMER/MODE CONTROL (MF-172)
CN402
CN401
⑧ IC203 ㊷ 2 V/DIV 50ns/DIV REC/PB
(See page 97)
CB-43 BOARD
CN001
Vcc
LED CONT
IC001 C BOX CONTROL
SIG
AMP
Q001
Q002-004 SWITCH
D CON
CLK
X001
(See page 97)
CN403
CN801
CONTROL S
CNJ801 CABLE BOX CONTROL
Q801, 802 D801, 802
SW
CNJ802 CONTROL S IN
SLV-900HF
CJ-1 BOARD

3-13. AUDIO BLOCK DIAGRAM


(See page 87)
RP-149 BOARD (2/2)
SW 5V
Vcc
AUDIO HEAD
CH1
CH2
CN801
HEAD AMP
REC : ON
Vcc
BUFFER
HEAD AMP
PB : ON
CURRENT AMP
AGC DET
AGC AMP
AGC AMP
CONTROL LOGIC
IC260
AFM REC/PB AMP
REC RP-149 (1/2)
CN804
CN602
PB RF
REC RF
AF SWP
AF SWP (IC203 (100)) FROM SERVO BLOCK
AF RECP̄ (IC203 ④) FROM SYSTEM CONTROL BLOCK
FROM SYSTEM CONTROL BLOCK
SP̄ (IC203 (91))
NT/PAL (IC203 (35)) FROM SYSTEM CONTROL BLOCK
AF ENVE (IC203 (61)) TO SERVO BLOCK
CN851
CN852
CN853
CN857
RF MONI (L)
BIAS
CHECK PIN
CN854
A HEAD (X)
A HEAD (Y)
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
CN855
RV851 REC BIAS
SLV-900HF
Q851 T851
Q852 T852
Q853-855
BIAS ERASE OSC
SWITCH
FULL ERS̄ (IC203 (36))
CJ701
AUDIO LINE 1 IN
(L)
(R)
FROM TUNER/AUDIO BLOCK
TUNER (M)
TUNER (L)
TUNER (R)
FROM SYSTEM CONTROL BLOCK
INPUT SEL 1 (IC203 (78))
INPUT SEL 2 (IC203 (82))
PJ201
CN201
AUDIO LINE 2 IN
L
R
MF171 BOARD (2/3)
(See page 119)
CN103
CN102
MF172 BOARD (2/3)
(See page 117)
CN402
05
(See page 109)
HF-27 BOARD
CN203
LEVEL VR Vcc
LEVEL VR (L)
LEVEL VR (R)
CN202
CN201
AMP
B.P.F
MOD DEMO
AUDIO LIMIT
RV206 VCO L
RV207 DEV L
IC201
HIFI/NORMAL AUDIO PROCESS
DROP OUT COMP
FM EMPH
PNR (L)
L.P.F
EVR (L)
AF SW PULSE
NT̄/PAL
B.P.F CTRL
RV204 B.P.F f0
SP̄
ENVE
HOLD MM
HIFI DET
DROP OUT DET
EVR (R)
L.P.F
AUDIO LIMIT
MOD DEMO
DROP OUT COMP
FM EMPH
PNR (R)
RV203 DEV R
RV202 VCO R
Q208 SWITCH
5V
OUTPUT CTRL
REC/EE PB CTRL
OUTPUT SW
L
R
EQ
REC EQ
IC204
NORMAL HEAD SW
PB
REC/EE
AMP
ATT
REC
ATT
LINE 1 (L)
LINE 1 (R)
TUNER (M)
TUNER (L)
TUNER (R)
LINE 3 (L)
LINE 3 (R)
INPUT SEL 1
INPUT SEL 2
LINE 2 (L)
LINE 2 (R)
INPUT SW
ATT
REGULATOR


(See page 109)
HF-27 BOARD
(See page 92)
MA-144 BOARD (3/4)
CN203
LEVEL VR Vcc
LEVEL VR (L)
LEVEL VR (R)
CN851
CN804
CN602
PB RF
CN852
CN202
REC RF
AGC AMP
AF SWP
CN853
CN201
AF SWP (IC203 (100)) FROM SERVO BLOCK
AF RECP (IC203 ④) FROM SYSTEM CONTROL BLOCK
FROM SYSTEM CONTROL BLOCK
SP (IC203 (91))
NT/PAL (IC203 ㉟) FROM SYSTEM CONTROL BLOCK
AF ENVE (IC203 (61)) TO SERVO BLOCK
CN857
RF MONI (L)
BIAS
CHECK PIN
CN854
A HEAD (X)
A HEAD (Y)
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
CN855
RV851
REC BIAS
SLV-900HF
Q851 T851
Q852 T852
Q853-855
BIAS ERASE OSC
SWITCH
FULL ERS (IC203 ㊱)
CJ701
AUDIO LINE 1 IN
(L)
(R)
FROM TUNER/AUDIO BLOCK
TUNER (M)
TUNER (L)
TUNER (R)
LINE 1 (L)
LINE 1 (R)
LINE 3 (L)
LINE 3 (R)
FROM SYSTEM CONTROL BLOCK
INPUT SEL 1 (IC203 (79))
INPUT SEL 2 (IC203 (82))
CN103
CN102
CN402
LINE 2 (L)
LINE 2 (R)
MF172 BOARD (2/3)
See page 117)
05
RV206 VCO L
RV207 DEV L
IC201
HIFI/NORMAL AUDIO PROCESS
AMP
B.P.F
MOD DEMO
AUDIO LIMIT
DROP OUT COMP
FM EMPH
PNR (L)
L.P.F
EVR (L)
AF SW PULSE
NT/PAL
B.P.F CTRL
RV204 B.P.F f0
HOLD MM
HIFI DET
SP
ENVE
DROP OUT DET
EVR (R)
PNR (R)
RV203 DEV R
RV202 VCO R
EQ
REC EQ
IC204
NORMAL HEAD SW
PB
REC/EE
REC
ATT
INPUT SW
Q208
SWITCH
5V
OUTPUT CTRL
REC/EE PB CTRL
OUTPUT SW
MIX AMP
D203
HR ST
HF/M/N
A MUTE
NA REC P
AF PB
NA PB
RF CONV OUT
LINE OUT (L)
LINE OUT (R)
L/R ST (IC203 (84))
HF/M/N (IC203 (85))
A MUTE (IC203 ㊲)
NA REC P (IC203 ⑩)
AF PB (IC203 (96))
NA PB (IC203 ⑪)
FROM SYSTEM CONTROL BLOCK
To RF MOD (A) RF701
LINE OUT
REGULATOR
Q201
Q202
SW 12V
GND
-30V

3-14. TIMER, TUNER MODE CONTROL MICROCOMPUTER PIN FUNCTION (MF-172 BOARD IC101 MB89905-VSX1910)

No.	Port Name	I/O	Signal Name	Contents
1	CL1		32K X'tal	Connect oscillator for clock
2	CL0		32K X'tal	Connect oscillator for clock
3	MOD0		GND	
4	MOD1		GND	
5	X0		X'tal	Connect main oscillator
6	X1		X'tal	Connect main oscillator
7	Vss		GND	
8	XRST	I	$\overline{\text{RESET}}$	Reset signal input
9	P00/E120	O	PLL ENABLE	Tuner enable signal
10	P01/E121	O	PLL DATA	Tuner data signal
11	P02/E122	O	PLL CLOCK	Tuner clock signal
12	P03/E123	O	$\overline{\text{C-BOX CS}}$	C-BOX chip select
13	P04/E124	O	$\overline{\text{C-BOX RESET}}$	C-BOX reset
14	P05/E125	O	$\overline{\text{COSMO CS}}$	System control chip select signal
15	P06/E126	O	$\overline{\text{COSMO RESET}}$	System control reset signal
16	P07/E127	O	$\overline{\text{CG CS}}$	Character generator chip select signal
17	P10/E110	I	$\overline{\text{POWER FAIL}}$	Power failure detect signal input
18	P11/E111	I	$\overline{\text{V SYNC}}$	V sync. signal input
19	P12/E112	I	H DET	Video signal detect signal input
20	P13/E113	I	C+ DET	Not used
21	P14	O	C+ DATA	Not used
22	P15	O	C+ CLK	Not used
23	P16	I	$\overline{\text{STEREO}}$	Tuner audio mode input
24	P17	I	$\overline{\text{BILINGUAL}}$	Tuner audio mode input
25	P20	O	$\overline{\text{STEREO}}$	Stereo, bilingual, HiFi LED
26	P21	O	$\overline{\text{TIMER}}$	TIMER LED
27	P22	O	$\overline{\text{REC}}$	REC LED
28	CMOD		GND	
29	P24/SI0	O	FF	FF LED
30	P25/SO0	O	FWD	FWD LED
31	P26/SCLK0	O	PAUSE	PAUSE LED
32	P27/RMCI	I	SIRCS IN	SIRCS signal input
33	P30	O	RVS	RVS LED
34	P31	O	REW	REW LED
35	P32	O	H. S. REW	H. S. REW LED

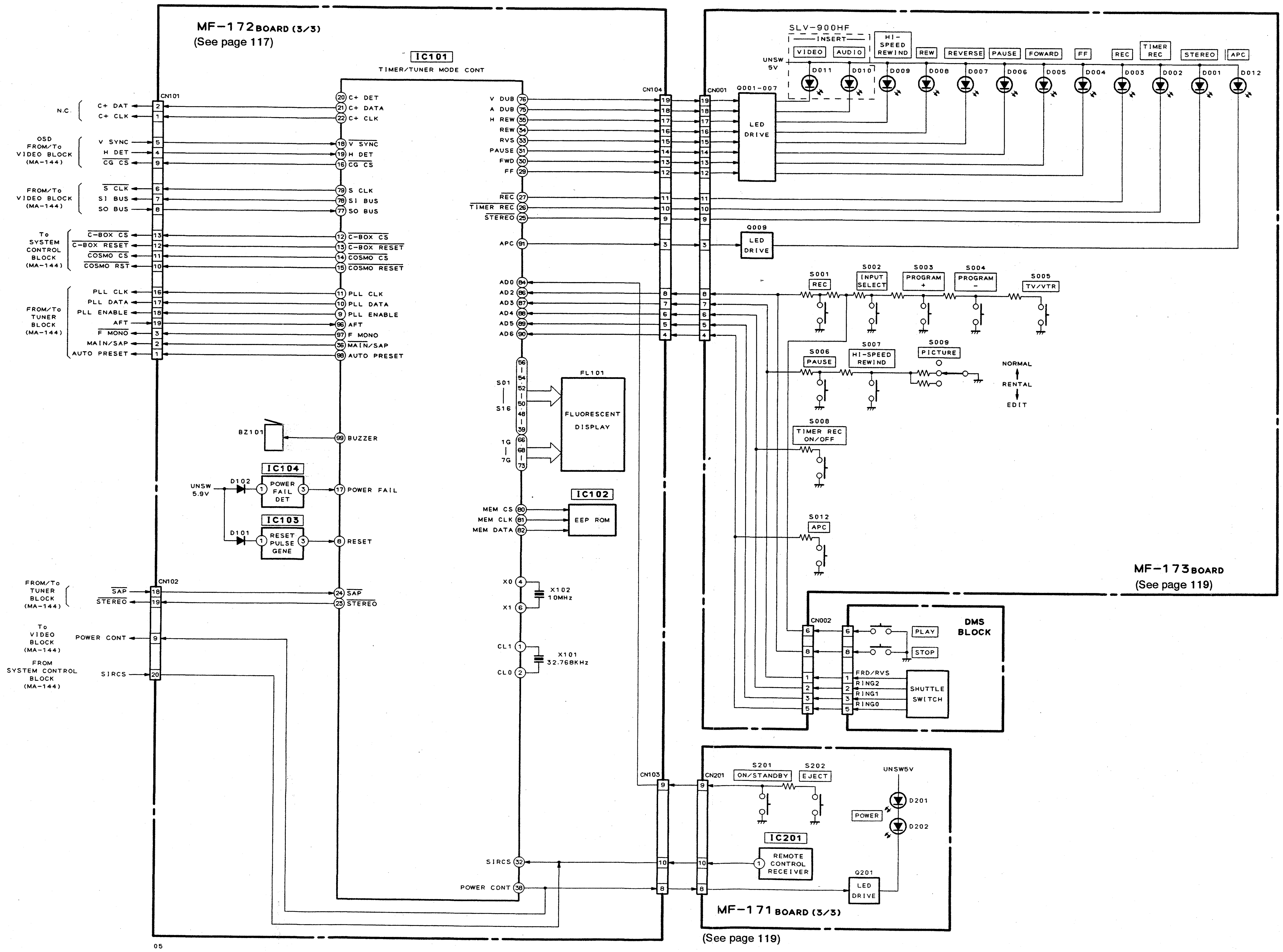
No.	Port Name	I/O	Signal Name	Contents
36	P33/PWMO	O	SAP/$\overline{\text{MAIN}}$	Normal audio SAP/MAIN select
37	P34/PPGO	O	N. C.	
38	P35/PPGI	O	POWER CONT	Power ON/OFF control signal
39	FS00	O	S16	FDP Segment 16
40	FS01	O	S15	FDP Segment 15
41	FS02	O	S14	FDP Segment 14
42	FS03	O	S13	FDP Segment 13
43	FS04	O	S12	FDP Segment 12
44	FS05	O	S11	FDP Segment 11
45	FS06	O	S10	FDP Segment 10
46	FS07	O	S09	FDP Segment 9
47	FS08	O	S08	FDP Segment 8
48	FS09	O	S07	FDP Segment 7
49	Vcc	O	5V	
50	FS10	O	S06	FDP Segment 6
51	FS11	O	S05	FDP Segment 5
52	FS12	O	S04	FDP Segment 4
53	Vfdp		−30V	
54	FS13	O	S03	FDP Segment 3
55	FS14	O	S02	FDP Segment 2
56	FS15	O	S01	FDP Segment 1
57	FS16		N. C.	
58	Vss		GND	
59	FS17		N. C.	
60	FS18		N. C.	
61	FS19		N. C.	
62	FC10/FS20		N. C.	
63	FC10/FS21		N. C.	
64	FC09/FS22		N. C.	
65	FC08/FS23		N. C.	
66	FC07	O	1G	FDP Grid 1
67	Vcc		5V	
68	FC06	O	2G	FDP Grid 2
69	FC05	O	3G	FDP Grid 3
70	FC04	O	4G	FDP Grid 4

No.	Port Name	I/O	Signal Name	Contents
71	FC03	O	5G	FDP Grid 5
72	FC02	O	6G	FDP Grid 6
73	FC01	O	7G	FDP Grid 7
74	FC00		N. C.	
75	P80/STB	O	A INSERT	A INSERT LED
76	P81/XCS	O	V INSERT	V INSERT LED (SLV-900HF)
77	P82/SI1	I	SO BUS	Serial data input
78	P83/SO1	O	SI BUD	Serial data input
79	P84/SCLK1	O	S CLK	Clock for serial communication
80	P85/ECK	O	MEM CS	E²PROM chip seelct signal
81	P86/T01	O	MEM CLK	E²PROM clock
82	P87/T02	O	MEM DATA	E²PROM data
83	AVss		GND	
84	P90/AN00	I	A/D0	Key reading A/D input
85	P91/AN01	I	A/D1	Key reading A/D input
86	P92/AN02	I	A/D2	Key reading A/D input
87	P93/AN03	I	A/D3	Key reading A/D input
88	P94/AN04	I	A/D4	Key reading A/D input
89	P95/AN05	I	A/D5	Key reading A/D input
90	P96/AN06	I	A/D6	Key reading A/D input
91	P97/AN07	O	APC	APC LED
92	AVcc		5V	
93	PA0/AN08		N. C.	
94	PA1/AN09		DEST1	Destination discriminating A/D input
95	PA2/AN10	I	DEST2	Destination discriminating A/D input
96	PA3/AN11	I	AFT	Tuner AFT input
97	PA4/LSI	O	F MONO	Tuner audio select control
98	PA5/LSO	O	AUTO RESET	Automatic preset sensitivity select
99	PA6/COUT	O	BUZZER	Buzzer output
100	Vcc		5V	

A/D Port Assignment

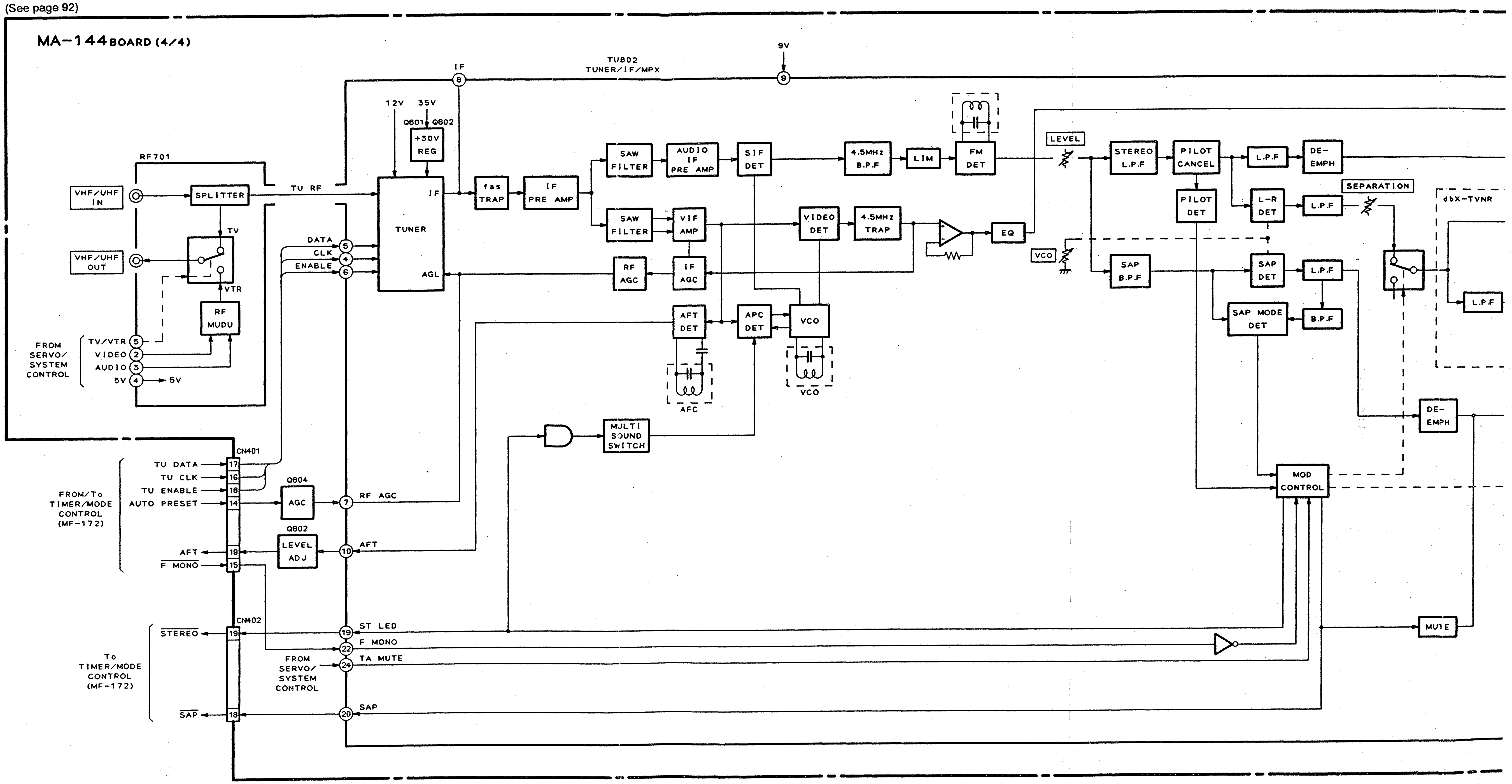
Level Port	SW0	SW1	SW2	SW3	SW4	SW5	SW6
AN00	POWER	EJECT					
AN01							
AN02	STOP	REC	PLAY	INPUT SEL	PROGRAM (+)	PROGRAM (−)	TV/VTR
AN03	FWD/RVS	PAUSE	H. S. REW			EDIT	RENTAL
AN04	RING2	TIMER REC ON/OFF			COLOR SEL0	COLOR SEL1	COLOR SEL2
AN05	RING1					NTSC PB SEL0	NTSC PB SEL1
AN06	RING0	TEST	X120 (TEST)		APC		
AN07							
AN08							
AN09	DESTINATION						
AN10							
AN11	AFT						

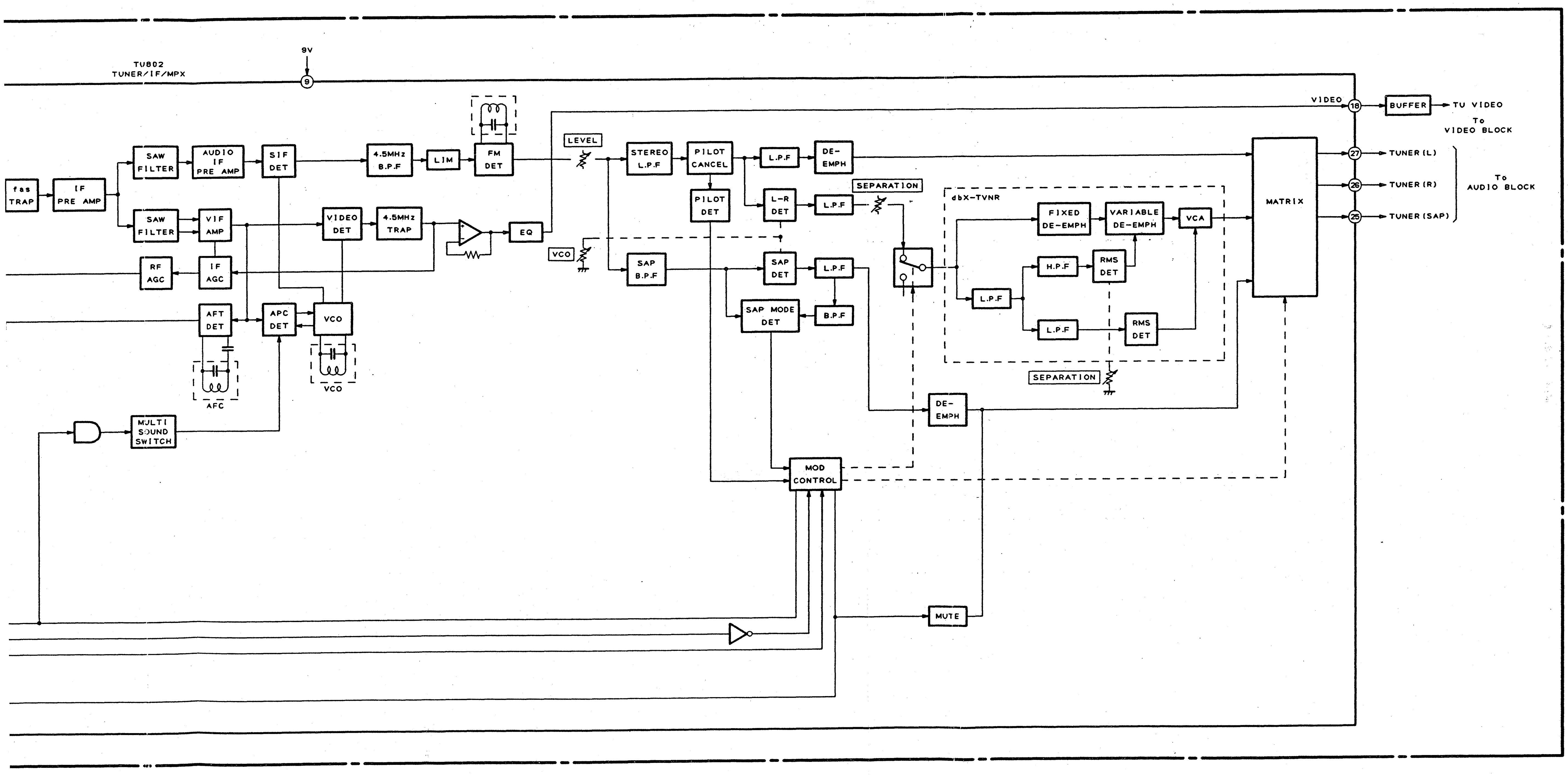
3-15. TIMER, TUNER, MODE CONTROL BLOCK DIAGRAM


MF-172 BOARD (3/3)
(See page 117)
IC101
TIMER/TUNER MODE CONT
CN101
N.C.
C+ DAT
C+ CLK
OSD FROM/To VIDEO BLOCK (MA-144)
V SYNC
H DET
CG CS
FROM/To VIDEO BLOCK (MA-144)
S CLK
SI BUS
SO BUS
To SYSTEM CONTROL BLOCK (MA-144)
C-BOX CS
C-BOX RESET
COSMO CS
COSMO RST
FROM/To TUNER BLOCK (MA-144)
PLL CLK
PLL DATA
PLL ENABLE
AFT
F MONO
MAIN/SAP
AUTO PRESET
20 C+ DET
21 C+ DATA
22 C+ CLK
18 V SYNC
19 H DET
16 CG CS
79 S CLK
78 SI BUS
77 SO BUS
12 C-BOX CS
13 C-BOX RESET
14 COSMO CS
15 COSMO RESET
11 PLL CLK
10 PLL DATA
9 PLL ENABLE
96 AFT
97 F MONO
36 MAIN/SAP
98 AUTO PRESET
V DUB 76
A DUB 75
H REW 35
REW 34
RVS 33
PAUSE 31
FWD 30
FF 29
REC 27
TIMER REC 26
STEREO 25
APC 91
AD0 84
AD2 86
AD3 87
AD4 88
AD5 89
AD6 90
S01
S16
1G
7G
FL101
FLUORESCENT DISPLAY
BZ101
99 BUZZER
IC104
UNSW 5.9V
D102
POWER FAIL DET
17 POWER FAIL
IC103
D101
RESET PULSE GENE
8 RESET
IC102
MEM CS 80
MEM CLK 81
MEM DATA 82
EEP ROM
X0 4
X1 6
X102 10MHz
CL1 1
CL0 2
X101 32.768KHz
FROM/To TUNER BLOCK (MA-144)
CN102
SAP
STEREO
24 SAP
23 STEREO
To VIDEO BLOCK (MA-144)
POWER CONT
FROM SYSTEM CONTROL BLOCK (MA-144)
SIRCS
SIRCS 32
POWER CONT 38
CN104
CN103
05
SLV-900HF
INSERT
VIDEO
AUDIO
HI-SPEED REWIND
REW
REVERSE
PAUSE
FOWARD
FF
REC
TIMER REC
STEREO
APC
UNSW 5V
D011
D010
D009
D008
D007
D006
D005
D004
D003
D002
D001
D012
CN001
Q001-007
LED DRIVE
Q009
LED DRIVE
S001 REC
S002 INPUT SELECT
S003 PROGRAM +
S004 PROGRAM -
S005 TV/VTR
S006 PAUSE
S007 HI-SPEED REWIND
S009 PICTURE
NORMAL
RENTAL
EDIT
S008 TIMER REC ON/OFF
S012 APC
MF-173 BOARD
(See page 119)
CN002
DMS BLOCK
PLAY
STOP
FRD/RVS
RING2
RING1
RING0
SHUTTLE SWITCH
CN201
S201 ON/STANDBY
S202 EJECT
UNSW5V
D201
D202
POWER
IC201
REMOTE CONTROL RECEIVER
Q201
LED DRIVE
MF-171 BOARD (3/3)
(See page 119)

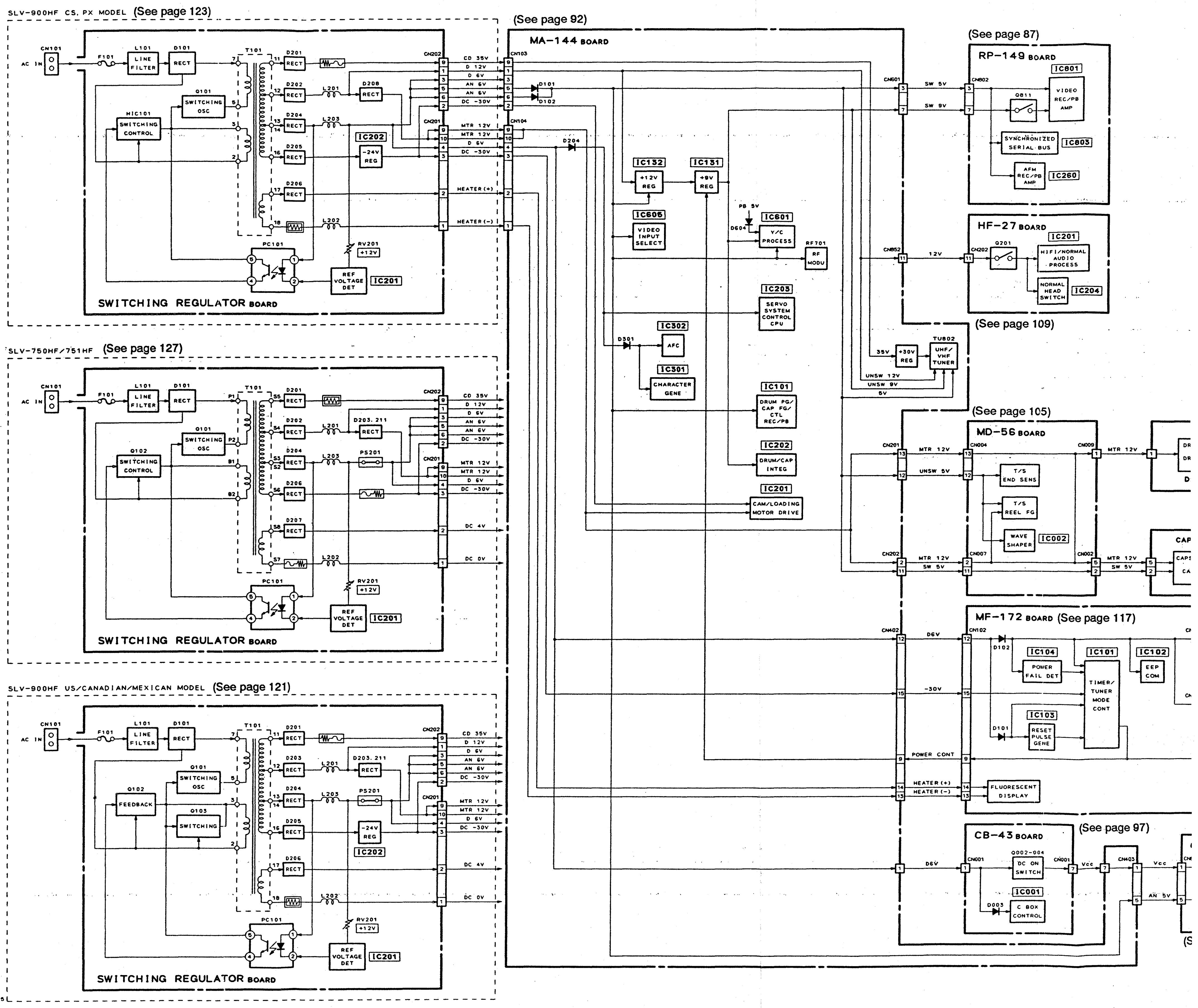
3-16. TUNER BLOCK DIAGRAM

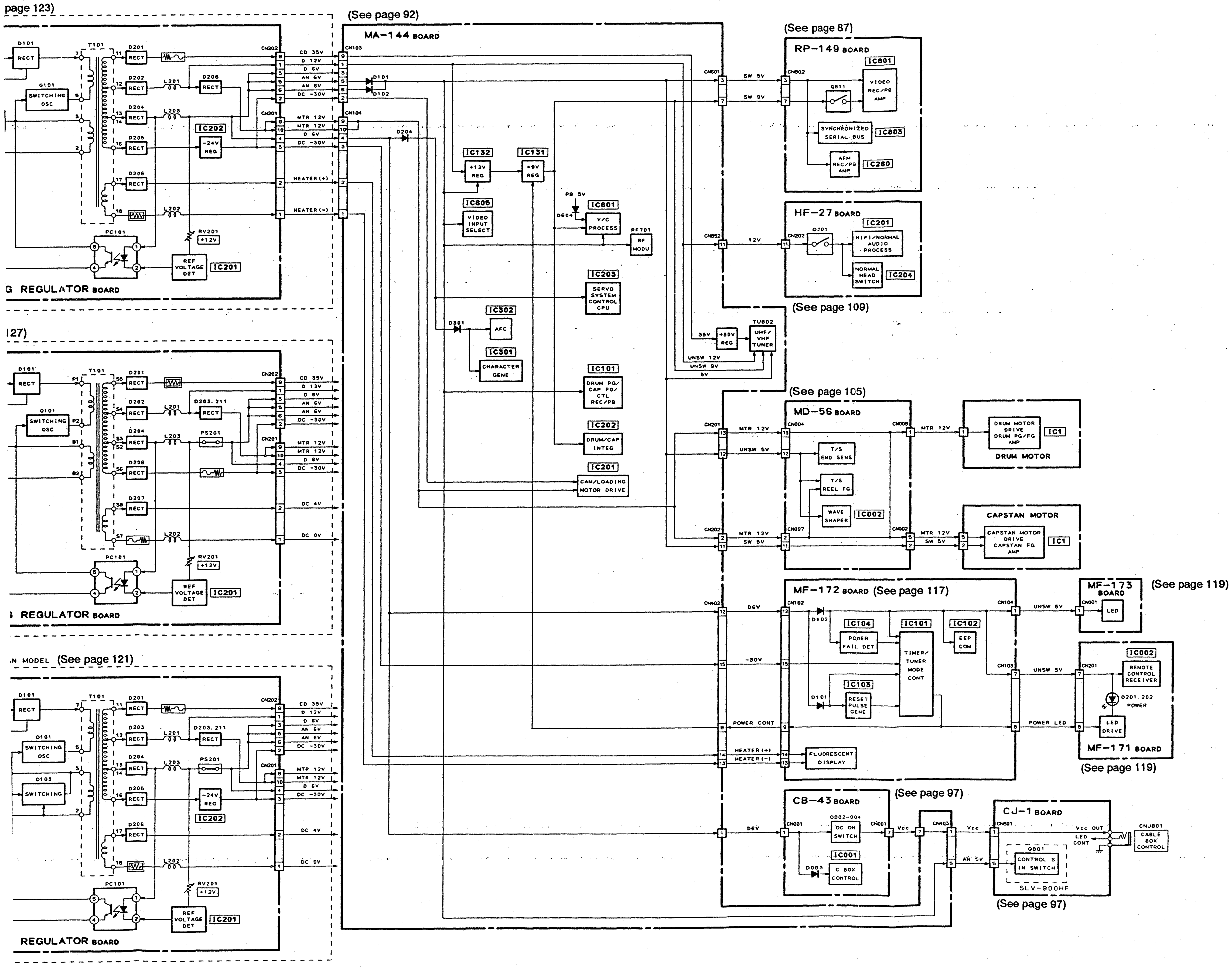
(See page 92)


MA-144 BOARD (4/4)
TU802
TUNER/IF/MPX
IF
8
9V
9
12V
35V
Q801
Q802
+30V
REG
RF701
VHF/UHF
IN
SPLITTER
TU RF
TV
VHF/UHF
OUT
VTR
RF
MUDU
FROM
SERVO/
SYSTEM
CONTROL
TV/VTR
VIDEO
AUDIO
5V
5V
TUNER
IF
AGL
DATA
CLK
ENABLE
fas
TRAP
IF
PRE AMP
SAW
FILTER
AUDIO
IF
PRE AMP
SIF
DET
4.5MHz
B.P.F
LIM
FM
DET
SAW
FILTER
VIF
AMP
VIDEO
DET
4.5MHz
TRAP
EQ
RF
AGC
IF
AGC
AFT
DET
APC
DET
VCO
AFC
VCO
MULTI
SOUND
SWITCH
LEVEL
STEREO
L.P.F
PILOT
CANCEL
L.P.F
DE-
EMPH
PILOT
DET
L-R
DET
L.P.F
SEPARATION
dbX-TVNR
VCO
SAP
B.P.F
SAP
DET
L.P.F
L.P.F
SAP MODE
DET
B.P.F
DE-
EMPH
MOD
CONTROL
MUTE
CN401
FROM/To
TIMER/MODE
CONTROL
(MF-172)
TU DATA
TU CLK
TU ENABLE
AUTO PRESET
17
16
18
14
Q804
AGC
7
RF AGC
Q802
LEVEL
ADJ
10
AFT
AFT
19
F MONO
15
CN402
STEREO
19
To
TIMER/MODE
CONTROL
(MF-172)
SAP
18
19
ST LED
22
F MONO
FROM
SERVO/
SYSTEM
CONTROL
24
TA MUTE
20
SAP


TU802
TUNER/IF/MPX
9V
9
f sc
TRAP
IF
PRE AMP
SAW
FILTER
AUDIO
IF
PRE AMP
SIF
DET
4.5MHz
B.P.F
LIM
FM
DET
SAW
FILTER
VIF
AMP
VIDEO
DET
4.5MHz
TRAP
EQ
RF
AGC
IF
AGC
AFT
DET
APC
DET
VCO
AFC
VCO
MULTI
SOUND
SWITCH
LEVEL
VCO
STEREO
L.P.F
PILOT
CANCEL
PILOT
DET
L.P.F
DE-
EMPH
L-R
DET
L.P.F
SEPARATION
SAP
B.P.F
SAP
DET
L.P.F
SAP MODE
DET
B.P.F
dbX-TVNR
FIXED
DE-EMPH
VARIABLE
DE-EMPH
VCA
H.P.F
RMS
DET
L.P.F
L.P.F
RMS
DET
SEPARATION
DE-
EMPH
MOD
CONTROL
MUTE
MATRIX
VIDEO
18
BUFFER
TU VIDEO
To
VIDEO BLOCK
27
TUNER (L)
26
TUNER (R)
25
TUNER (SAP)
To
AUDIO BLOCK

3-17. POWER BLOCK DIAGRAM

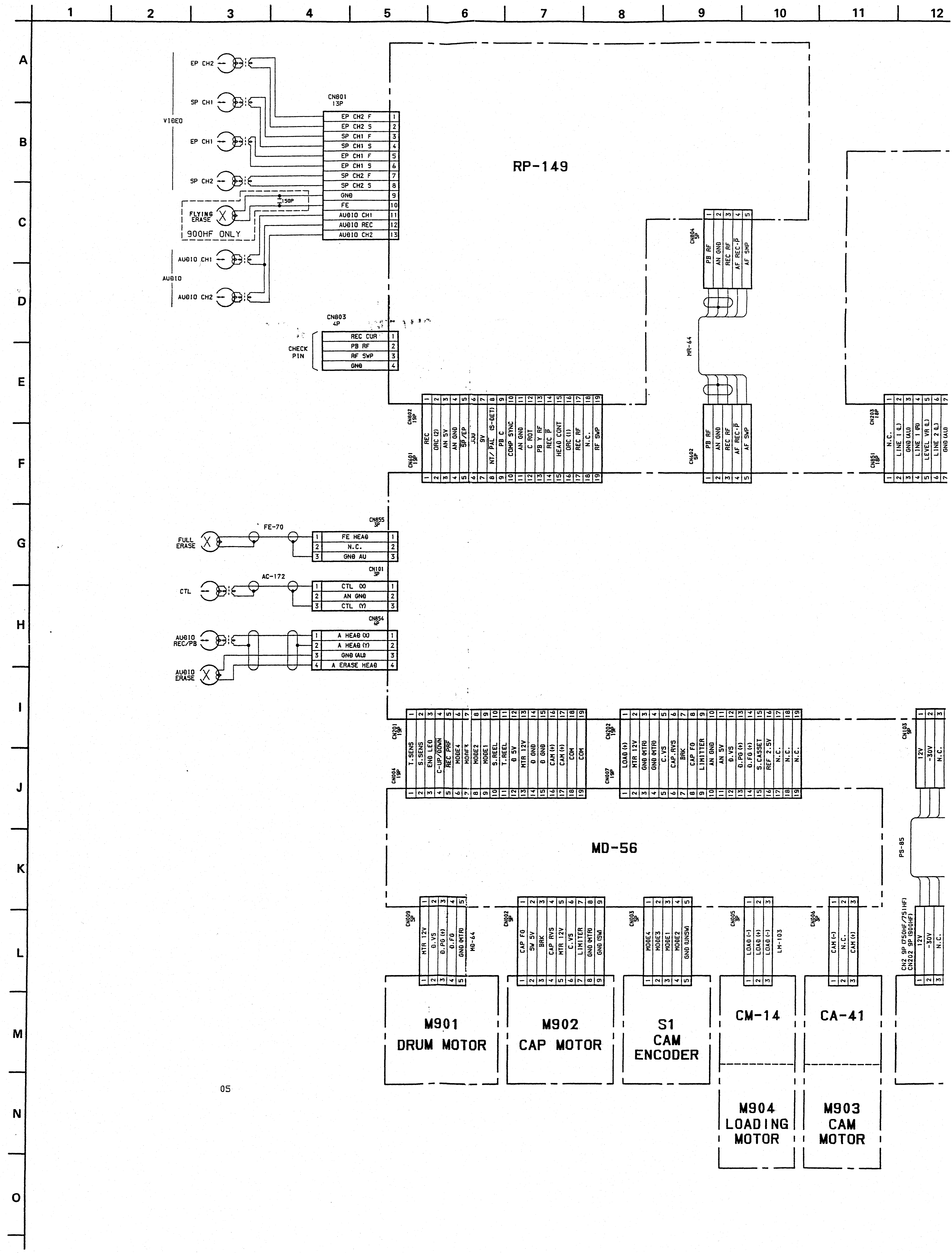

SLV-900HF CS, PX MODEL (See page 123)
SLV-750HF/751HF (See page 127)
SLV-900HF US/CANADIAN/MEXICAN MODEL (See page 121)
SWITCHING REGULATOR BOARD
CN101
AC IN
F101
L101
LINE FILTER
D101
RECT
T101
Q101
SWITCHING OSC
HIC101
SWITCHING CONTROL
Q102
FEEDBACK
Q103
SWITCHING
D201
D202
D203, 211
D204
D205
D206
D207
D208
L201
L202
L203
PS201
IC202
-24V REG
PC101
RV201
+12V
REF VOLTAGE DET
IC201
CN202
CN201
CD 35V
D 12V
D 6V
AN 6V
DC -30V
MTR 12V
HEATER (+)
HEATER (-)
DC 4V
DC 0V
(See page 92)
MA-144 BOARD
CN103
CN104
D101
D102
D204
IC132
+12V REG
IC131
+9V REG
IC606
VIDEO INPUT SELECT
PB 5V
D604
IC601
Y/C PROCESS
RF701
RF MODU
IC205
SERVO SYSTEM CONTROL CPU
IC302
AFC
D301
IC301
CHARACTER GENE
IC101
DRUM PG/ CAP FG/ CTL REC/PB
IC202
DRUM/CAP INTEG
IC201
CAM/LOADING MOTOR DRIVE
CN601
CN652
SW 5V
SW 9V
12V
35V
+30V REG
TU802
UHF/ VHF TUNER
UNSW 12V
UNSW 9V
5V
(See page 87)
RP-149 BOARD
CN802
IC801
Q811
VIDEO REC/PB AMP
SYNCHRONIZED SERIAL BUS
IC803
AFM REC/PB AMP
IC260
HF-27 BOARD
CN202
Q201
IC201
HIFI/NORMAL AUDIO PROCESS
NORMAL HEAD SWITCH
IC204
(See page 109)
(See page 105)
MD-56 BOARD
CN004
CN009
CN007
CN002
UNSW 5V
T/S END SENS
T/S REEL FG
WAVE SHAPER
IC002
MF-172 BOARD (See page 117)
CN402
CN102
D6V
-30V
D102
IC104
POWER FAIL DET
IC101
TIMER/ TUNER MODE CONT
IC102
EEP COM
IC103
RESET PULSE GENE
D101
POWER CONT
FLUORESCENT DISPLAY
CB-43 BOARD
(See page 97)
CN001
Q002-004
DC ON SWITCH
IC001
D003
C BOX CONTROL
CN003
Vcc
AN 5V


page 123)
D101
RECT
T101
Q101
SWITCHING OSC
D201
D202
D204
D205
D206
D208
L201
L203
L202
IC202
-24V REG
PC101
RV201
+12V
REF VOLTAGE DET
IC201
CN202
CD 35V
D 12V
D 6V
AN 6V
AN 6V
DC -30V
CN201
MTR 12V
MTR 12V
D 6V
DC -30V
HEATER (+)
HEATER (−)
G REGULATOR BOARD
127)
D203, 211
PS201
D207
DC 4V
DC 0V
REGULATOR BOARD
N MODEL (See page 121)
Q103
SWITCHING
REGULATOR BOARD
(See page 92)
MA-144 BOARD
CN103
CN104
D101
D102
D204
IC132
+12V REG
IC131
+9V REG
IC605
VIDEO INPUT SELECT
PB 5V
D604
IC601
Y/C PROCESS
RF701
RF MODU
IC203
SERVO SYSTEM CONTROL CPU
D301
IC302
AFC
IC301
CHARACTER GENE
IC101
DRUM PG/ CAP FG/ CTL REC/PB
IC202
DRUM/CAP INTEG
IC201
CAM/LOADING MOTOR DRIVE
CN601
SW 5V
SW 9V
CN852
12V
35V
+30V REG
TU802
UHF/ VHF TUNER
UNSW 12V
UNSW 9V
5V
(See page 87)
RP-149 BOARD
CN802
IC801
VIDEO REC/PB AMP
Q811
SYNCHRONIZED SERIAL BUS
IC803
AFM REC/PB AMP
IC260
HF-27 BOARD
CN202
Q201
IC201
HIFI/NORMAL AUDIO PROCESS
NORMAL HEAD SWITCH
IC204
(See page 109)
(See page 105)
MD-56 BOARD
CN201
CN202
CN004
CN007
CN009
CN002
MTR 12V
UNSW 5V
SW 5V
T/S END SENS
T/S REEL FG
WAVE SHAPER
IC002
DRUM MOTOR DRIVE DRUM PG/FG AMP
IC1
DRUM MOTOR
CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE CAPSTAN FG AMP
IC1
MF-172 BOARD (See page 117)
CN402
CN102
D6V
-30V
POWER CONT
HEATER (+)
HEATER (−)
D102
D101
IC104
POWER FAIL DET
IC101
TIMER/ TUNER MODE CONT
IC102
EEP COM
IC103
RESET PULSE GENE
FLUORESCENT DISPLAY
CN104
CN103
UNSW 5V
POWER LED
MF-173 BOARD
(See page 119)
CN001
LED
CN201
IC002
REMOTE CONTROL RECEIVER
D201, 202 POWER
LED DRIVE
MF-171 BOARD
(See page 119)
CB-43 BOARD
(See page 97)
CN001
Q002-004
DC ON SWITCH
IC001
D003
C BOX CONTROL
Vcc
CN403
AN 5V
CJ-1 BOARD
CN801
Vcc OUT
LED CONT
Q801
CONTROL S IN SWITCH
SLV-900HF
CNJ801
CABLE BOX CONTROL
(See page 97)

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM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A
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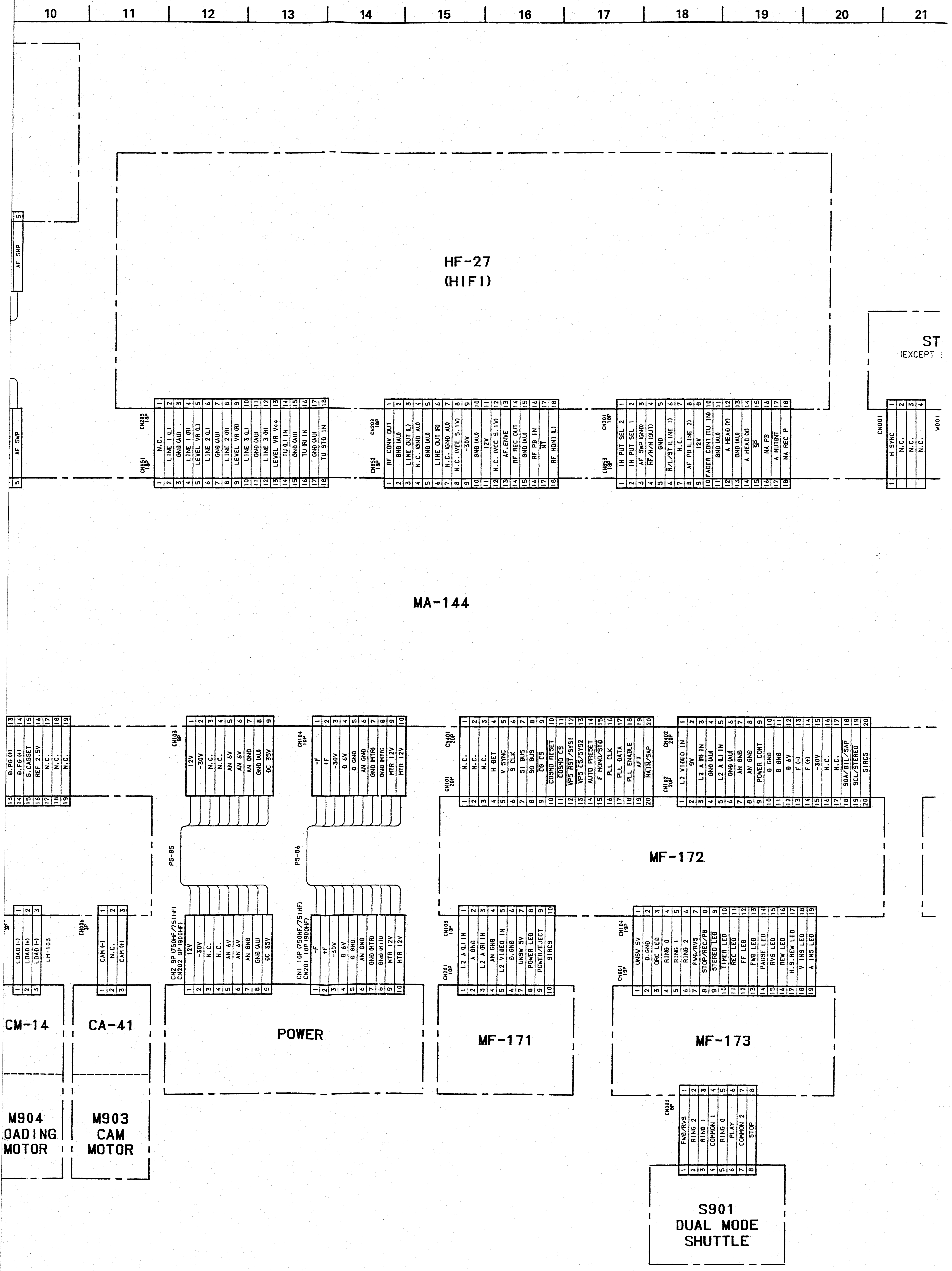
H
I
J
K
L
M
N
O
VIDEO
EP CH2
SP CH1
EP CH1
SP CH2
FLYING ERASE
900HF ONLY
150P
AUDIO
AUDIO CH1
AUDIO CH2
CN801 13P
EP CH2 F
EP CH2 S
SP CH1 F
SP CH1 S
EP CH1 F
EP CH1 S
SP CH2 F
SP CH2 S
GND
FE
AUDIO CH1
AUDIO REC
AUDIO CH2
CN803 4P
CHECK PIN
REC CUR
PB RF
RF SWP
GND
RP-149
CN802 19P
CN601 19P
REC
ORC (2)
AN 5V
AN GND
SP/EP
JJG
9V
NT/PAL (S-DET)
PB C
COMP SYNC
AN GND
C ROT
PB Y RF
REC P
HEAD CONT
ORC (1)
REC RF
N.C.
RF SWP
CN804 5P
CN602 5P
PB RF
AN GND
REC RF
AF REC·P
AF SMP
AF SWP
MR-64
CN203 18P
CN851 18P
N.C.
LINE 1 (L)
GND (AU)
LINE 1 (R)
LEVEL VR (L)
LINE 2 (L)
GND (AU)
FULL ERASE
FE-70
CN855 3P
FE HEAD
N.C.
GND AU
CTL
AC-172
CN101 3P
CTL (X)
AN GND
CTL (Y)
AUDIO REC/PB
AUDIO ERASE
CN854 4P
A HEAD (X)
A HEAD (Y)
GND (AU)
A ERASE HEAD
CN201 19P
CN004 19P
T.SENS
S.SENS
END LED
C-UP/DOWN
REC PRF
MODE4
MODE3
MODE2
MODE1
S.REEL
T.REEL
D 5V
MTR 12V
D GND
D GND
CAM (+)
CAM (+)
COM
COM
CN202 19P
CN007 19P
LOAD (+)
MTR 12V
GND (MTR)
GND (MTR)
C.VS
CAP.RVS
BRK
CAP FG
LIMITTER
AN GND
AN 5V
D.VS
D.PG (+)
D.FG (+)
S.CASSET
REF 2.5V
N.C.
N.C.
N.C.
CN103 9P
12V
-30V
N.C.
PS-85
MD-56
CN009 5P
MTR 12V
D.VS
D.PG (+)
D.FG
GND (MTR)
MD-64
CN002 9P
CAP FG
SW 5V
BRK
CAP RVS
MTR 12V
C.VS
LIMITER
GND (MTR)
GND (SW)
CN003 5P
MODE4
MODE3
MODE1
MODE2
GND (UNSW)
CN005 3P
LOAD (-)
LOAD (+)
LOAD (-)
LM-103
CN006 3P
CAM (-)
N.C.
CAM (+)
CN2 9P (750HF/751HF)
CN202 9P (900HF)
12V
-30V
N.C.
M901
DRUM MOTOR
M902
CAP MOTOR
S1
CAM ENCODER
CM-14
CA-41
M904
LOADING MOTOR
M903
CAM MOTOR
05



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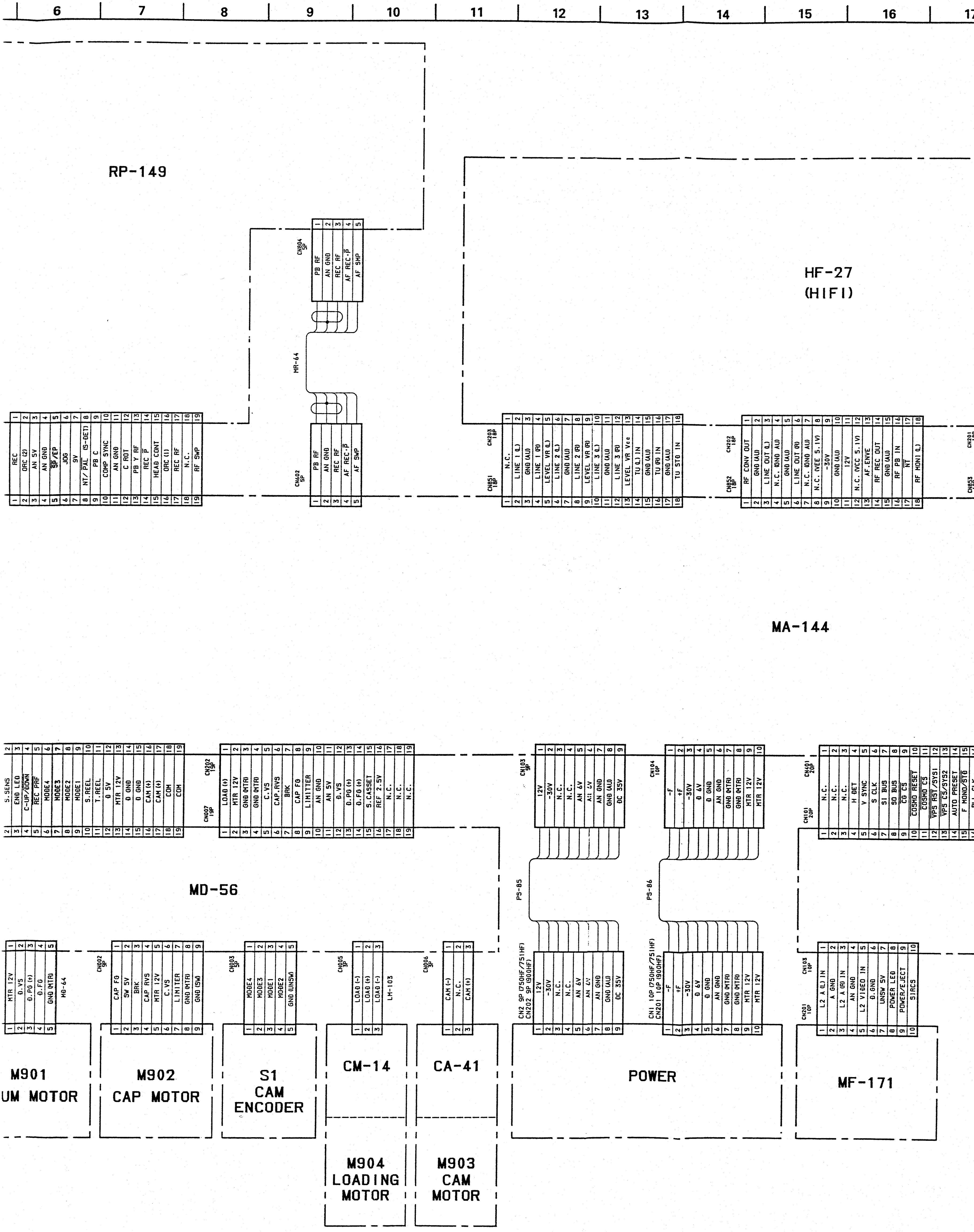
18
19
20
21
AF SWP
HF-27
(HIFI)
ST
(EXCEPT
CN203 18P
CN651 18P
N.C.
LINE 1 (L)
GND (AU)
LINE 1 (R)
LEVEL VR (L)
LINE 2 (L)
GND (AU)
LINE 2 (R)
LEVEL VR (R)
LINE 3 (L)
GND (AU)
LINE 3 (R)
LEVEL VR Vcc
TU (L) IN
GND (AU)
TU (R) IN
GND (AU)
TU STD IN
CN202 18P
CN652 18P
RF CONV OUT
GND (AU)
LINE OUT (L)
N.C. (GND AU)
GND (AU)
LINE OUT (R)
N.C. (GND AU)
N.C. (VEE 5.1V)
-30V
GND (AU)
12V
N.C. (VCC 5.1V)
AF.ENVE
RF REC OUT
GND (AU)
RF PB IN
NT
RF MONI (L)
CN201 18P
CN653 18P
IN PUT SEL 2
IN PUT SEL 1
AF SWP (GND)
HF/M/N (OUT)
GND
R/L/ST (LINE 1)
N.C.
AF PB (LINE 2)
12V
FADER CONT (TU IN)
GND (AU)
A HEAD (Y)
GND (AU)
A HEAD (X)
SP
NA PB
A MUTENT
NA REC P
CN001
H SYNC
N.C.
N.C.
N.C.
MA-144
D.PG (+)
D.FG (+)
S.CASSET
REF 2.5V
N.C.
N.C.
N.C.
CN103 9P
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
CN104 10P
-F
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
CN401 20P
CN101 20P
N.C.
N.C.
N.C.
H DET
V SYNC
S CLK
SI BUS
SO BUS
CG CS
COSMO RESET
COSMO CS
VPS RST/SYS1
VPS CS/SYS2
AUTO PRESET
F MONO/STD
PLL CLK
PLL DATA
PLL ENABLE
AFT
MAIN/SAP
CN402 20P
CN102 20P
L2 VIDEO IN
9V
L2 A (R) IN
AN GND
L2 A (L) IN
GND (AU)
AN GND
POWER CONT
D GND
D GND
D 6V
F (-)
F (+)
-30V
N.C.
N.C.
SDA/BIL/SAP
SCL/STEREO
SIRCS
PS-85
PS-86
MF-172
3P
LOAD (-)
LOAD (+)
LOAD (-)
LM-103
CN006 3P
CAM (-)
N.C.
CAM (+)
CN2 9P (750HF/751HF)
CN202 9P (900HF)
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
CN1 10P (750HF/751HF)
CN201 10P (900HF)
-F
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
CN103 10P
CN201 10P
L2 A (L) IN
A GND
L2 A (R) IN
AN GND
L2 VIDEO IN
D.GND
UNSW 5V
POWER LED
POWER/EJECT
SIRCS
CN104 19P
CN001 19P
UNSW 5V
D.GND
ORC LED
RING 0
RING 1
RING 2
FWD/RVS
STOP/REC/PB
STEREO LED
TIMER LED
REC LED
FF LED
FWD LED
PAUSE LED
RVS LED
REW LED
H.S.REW LED
V INS LED
A INS LED
CM-14
CA-41
POWER
MF-171
MF-173
M904
LOADING
MOTOR
M903
CAM
MOTOR
CN002 8P
FWD/RVS
RING 2
RING 1
COMMON 1
RING 0
PLAY
COMMON 2
STOP
S901
DUAL MODE
SHUTTLE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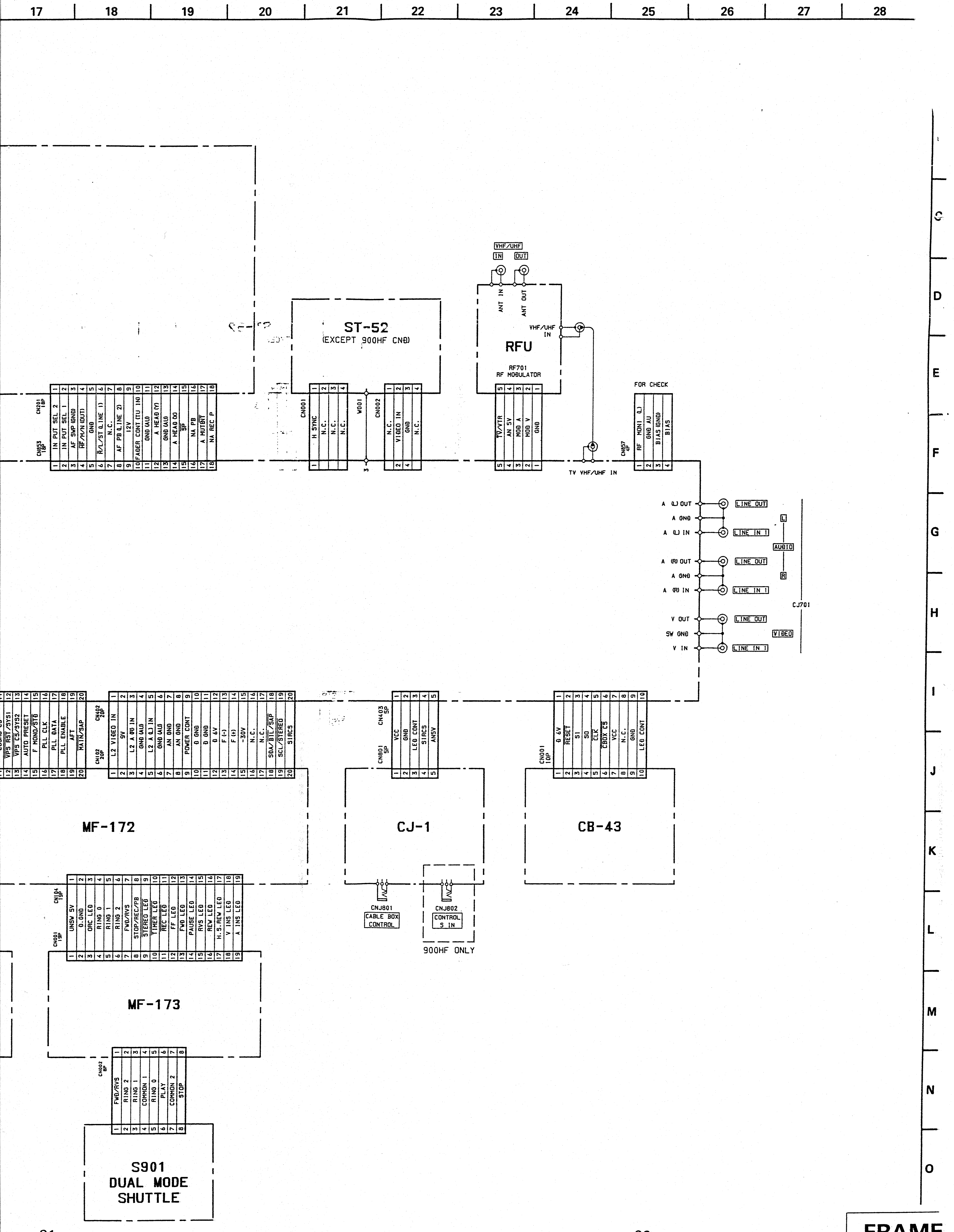
RP-149
HF-27
(HIFI)
MA-144
MD-56
CN804 5P
PB RF
AN GND
REC RF
AF REC·P
AF SWP
MR-64
CN602 5P
REC
ORC (2)
AN 5V
AN GND
SP/EP
JOG
9V
NT/PAL (S-DET)
PB C
COMP SYNC
AN GND
C ROT
PB Y RF
REC P
HEAD CONT
ORC (1)
REC RF
N.C.
RF SWP
CN203 18P
CN851 18P
N.C.
LINE 1 (L)
GND (AU)
LINE 1 (R)
LEVEL VR (L)
LINE 2 (L)
GND (AU)
LINE 2 (R)
LEVEL VR (R)
LINE 3 (L)
GND (AU)
LINE 3 (R)
LEVEL VR Vcc
TU (L) IN
GND (AU)
TU (R) IN
GND (AU)
TU STD IN
CN202 18P
CN852 18P
RF CONV OUT
GND (AU)
LINE OUT (L)
N.C. (GND AU)
GND (AU)
LINE OUT (R)
N.C. (GND AU)
N.C. (VEE 5.1V)
-30V
GND (AU)
12V
N.C. (VCC 5.1V)
AF.ENVE
RF REC OUT
GND (AU)
RF PB IN
NT
RF MONI (L)
S.SENS
END LED
C-UP/DOWN
REC PRF
MODE4
MODE3
MODE2
MODE1
S.REEL
T.REEL
D 5V
MTR 12V
D GND
D GND
CAM (+)
CAM (+)
COM
COM
CN202 19P
CN007 19P
LOAD (+)
MTR 12V
GND (MTR)
GND (MTR)
C.VS
CAP.RVS
BRK
CAP FG
LIMITTER
AN GND
AN 5V
D.VS
D.PG (+)
D.FG (+)
S.CASSET
REF 2.5V
N.C.
N.C.
N.C.
CN103 9P
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
CN104 10P
-F
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
PS-85
PS-86
CN401 20P
CN101 20P
N.C.
N.C.
N.C.
H DET
V SYNC
S CLK
SI BUS
SO BUS
CG CS
COSMO RESET
COSMO CS
VPS RST/SYS1
VPS CS/SYS2
AUTO PRESET
F.MONO/STD
MTR 12V
D.VS
D.PG (+)
D.FG
GND (MTR)
MD-64
CN002 9P
CAP FG
SW 5V
BRK
CAP RVS
MTR 12V
C.VS
LIMITER
GND (MTR)
GND (SW)
CN003 5P
MODE4
MODE3
MODE1
MODE2
GND (UNSW)
CN005 3P
LOAD (-)
LOAD (+)
LOAD (-)
LM-103
CN006 3P
CAM (-)
N.C.
CAM (+)
CN2 9P (750HF/751HF)
CN202 9P (900HF)
12V
-30V
N.C.
N.C.
AN 6V
AN 6V
AN GND
GND (AU)
DC 35V
CN1 10P (750HF/751HF)
CN201 10P (900HF)
-F
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
GND (MTR)
MTR 12V
MTR 12V
CN103 10P
CN201 10P
L2 A (L) IN
A GND
L2 A (R) IN
AN GND
L2 VIDEO IN
D.GND
UNSW 5V
POWER LED
POWER/EJECT
SIRCS
M901
UM MOTOR
M902
CAP MOTOR
S1
CAM
ENCODER
CM-14
CA-41
POWER
MF-171
M904
LOADING
MOTOR
M903
CAM
MOTOR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C
D
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J
K
L
M
N
O
ST-52
(EXCEPT 900HF CN0)
CN201 18P
CN853 18P
IN PUT SEL 2
IN PUT SEL 1
AF SWP (GND)
HF/M/N (OUT)
GND
R/L/ST (LINE 1)
N.C.
AF PB (LINE 2)
12V
FADER CONT (TU IN)
GND (AU)
A HEAD (Y)
GND (AU)
A HEAD (X)
SP
NA PB
A MUTBNT
NA REC P
CN001
H SYNC
N.C.
N.C.
N.C.
W001
CN002
N.C.
VIDEO IN
GND
N.C.
VHF/UHF
IN
OUT
ANT IN
ANT OUT
VHF/UHF IN
RFU
RF701
RF MODULATOR
TV/VTR
AN 5V
MOD A
MOD V
GND
TV VHF/UHF IN
FOR CHECK
CN857 4P
RF MONI (L)
GND AU
BIAS (GND)
BIAS
A (L) OUT
A GND
A (L) IN
A (R) OUT
A GND
A (R) IN
V OUT
SW GND
V IN
LINE OUT
LINE IN 1
LINE OUT
LINE IN 1
LINE OUT
LINE IN 1
L
AUDIO
R
VIDEO
CJ701
VPS RST/SYS1
VPS CS/SYS2
AUTO PRESET
F MONO/STD
PLL CLK
PLL DATA
PLL ENABLE
AFT
MAIN/SAP
CN402 20P
CN102 20P
L2 VIDEO IN
9V
L2 A (R) IN
GND (AU)
L2 A (L) IN
GND (AU)
AN GND
AN GND
POWER CONT
D GND
D GND
D 6V
F (-)
F (+)
-30V
N.C.
N.C.
SDA/BIL/SAP
SCL/STEREO
SIRCS
CN403 5P
CN801 5P
VCC
GND
LED CONT
SIRCS
AN5V
CN001 10P
D 6V
RESET
SI
SO
CLK
CBOX CS
VCC
N.C.
GND
LED CONT
MF-172
CJ-1
CB-43
CNJ801
CABLE BOX CONTROL
CNJ802
CONTROL S IN
900HF ONLY
CN104 19P
CN001 19P
UNSW 5V
D.GND
ORC LED
RING 0
RING 1
RING 2
FWD/RVS
STOP/REC/PB
STEREO LED
TIMER LED
REC LED
FF LED
FWD LED
PAUSE LED
RVS LED
REW LED
H.S.REW LED
V INS LED
A INS LED
MF-173
CN002 8P
FWD/RVS
RING 2
RING 1
COMMON 1
RING 0
PLAY
COMMON 2
STOP
S901
DUAL MODE
SHUTTLE

FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)**

For printed wiring boards:

- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ● : Through hole.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- ━━━ : B + Line.*
- ━ ━ ━ : B – Line.*
- ⇨ : IN/OUT direction of B line (+, –).
- Circled numbers refer to waveforms.*
- Voltages are dc between measurement point.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage are taken with a VOM (Input impedance 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

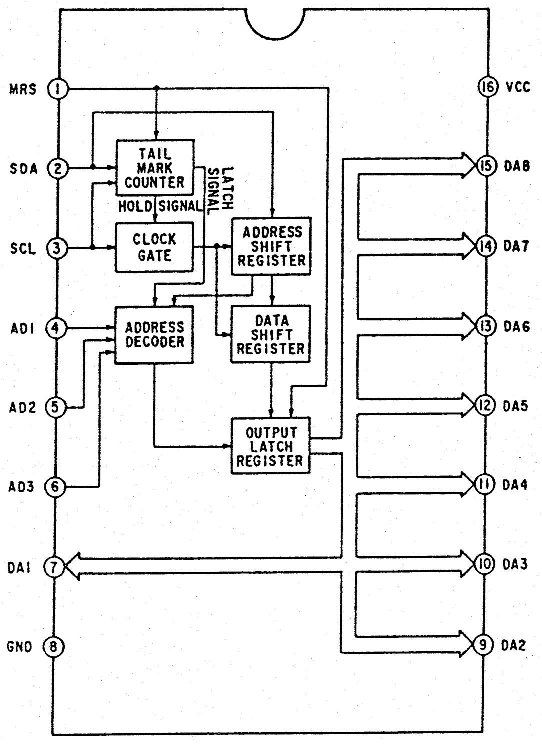
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- * : Indicated by the color red.

• IC Block Diagrams

IC803 HD4978FP



MRS
SDA
SCL
AD1
AD2
AD3
DA1
GND
VCC
DA8
DA7
DA6
DA5
DA4
DA3
DA2
TAIL MARK COUNTER
HOLD
SIGNAL
LATCH SIGNAL
CLOCK GATE
ADDRESS SHIFT REGISTER
ADDRESS DECODER
DATA SHIFT REGISTER
OUTPUT LATCH REGISTER
1
2
3
4
5
6
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8
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10
11
12
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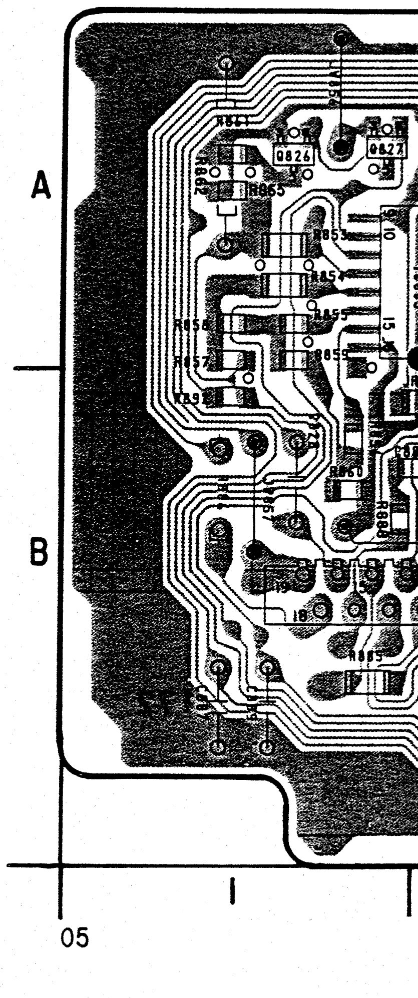
14
15
16

RP-149 (HEAD AMP) PRINTED WIRING BOARD

– Ref. No.: RP-149 Board; 1,000 series –

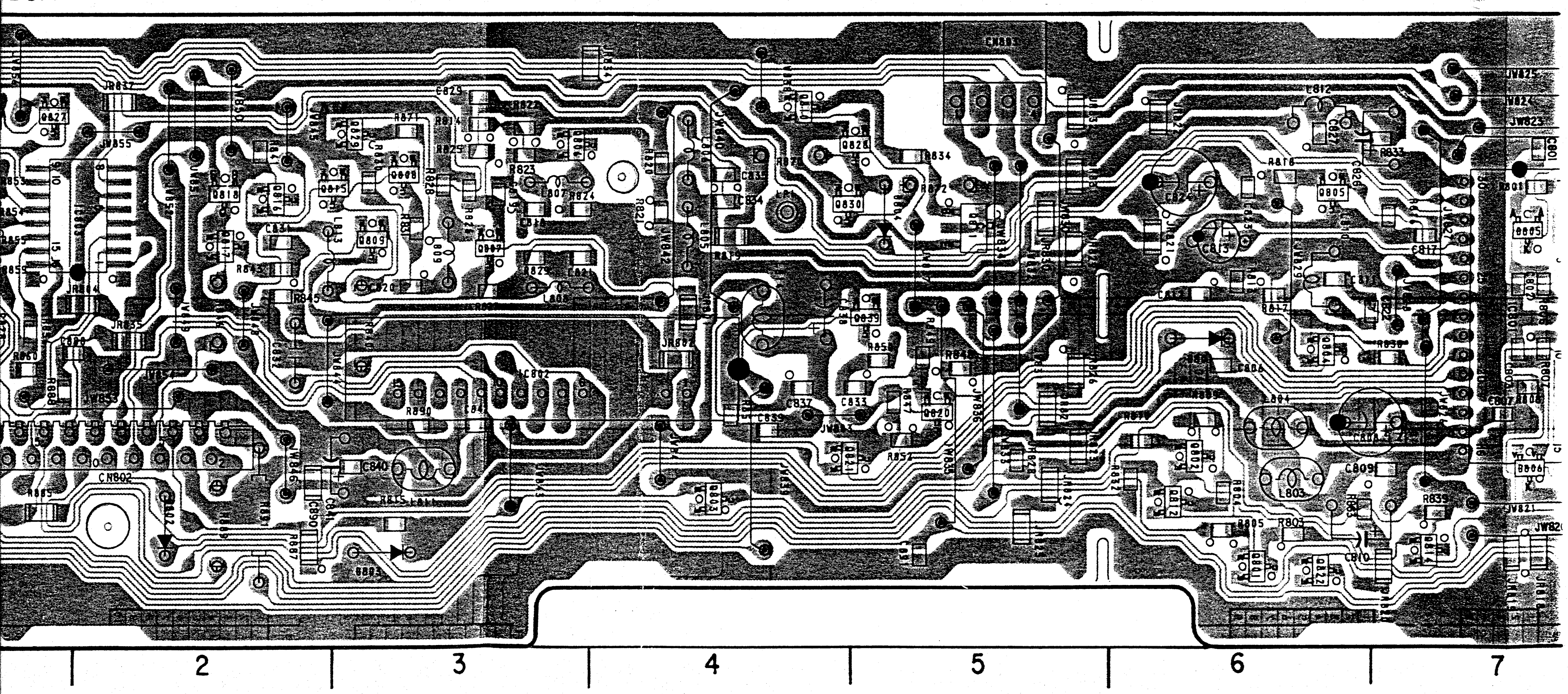
RP-149 BOARD	
D801	B-6
D802	B-2
D803	B-3
D804	A-5
D805	A-7
D806	B-7
IC260	B-9
IC801	A-7
IC803	A-1
Q801	B-6
Q802	B-6
Q803	B-4
Q804	B-6
Q805	A-6
Q806	A-3
Q807	A-3
Q808	A-3
Q809	A-3
Q810	A-4
Q811	A-5
Q812	B-6
Q814	B-7
Q815	A-2
Q816	A-2
Q817	A-2
Q818	A-2
Q820	B-5
Q821	B-5
Q822	B-6
Q823	B-8
Q824	B-8
Q826	A-1
Q827	A-1
Q828	A-5
Q830	A-4
Q839	B-5

RP-149 BOAR



A
B
05
1
Q826
Q827
R862
R865
R853
R854
R856
R857
R859
R860
R885

BOARD



	< DIODE >	
D805	8-719-400-18	MA152WK
D806	8-719-400-18	MA152WK
	< IC >	
IC803	8-759-097-80	HD49783FP
	< TRANSISTOR >	
Q100	8-729-216-22	2SA1162
Q101	8-729-216-22	2SA1162
Q102	8-729-421-19	UN2213
Q802	8-729-230-49	2SC2712-G
Q803	8-729-424-18	UN2113
Q804	8-729-230-49	2SC2712-G
Q805	8-729-216-22	2SA1162
Q806	8-729-216-22	2SA1162
Q807	8-729-230-49	2SC2712-G
Q809	8-729-230-49	2SC2712-G
Q810	8-729-421-19	UN2213
Q811	8-729-301-98	2SB1000A-L
Q812	8-729-230-49	2SC2712-G
Q814	8-729-421-19	UN2213
Q822	8-729-216-22	2SA1162
Q823	8-729-216-22	2SA1162
Q824	8-729-216-22	2SA1162
Q826	8-729-424-18	UN2113
Q827	8-729-421-19	UN2213
Q828	8-729-421-19	UN2213
Q830	8-729-421-19	UN2213

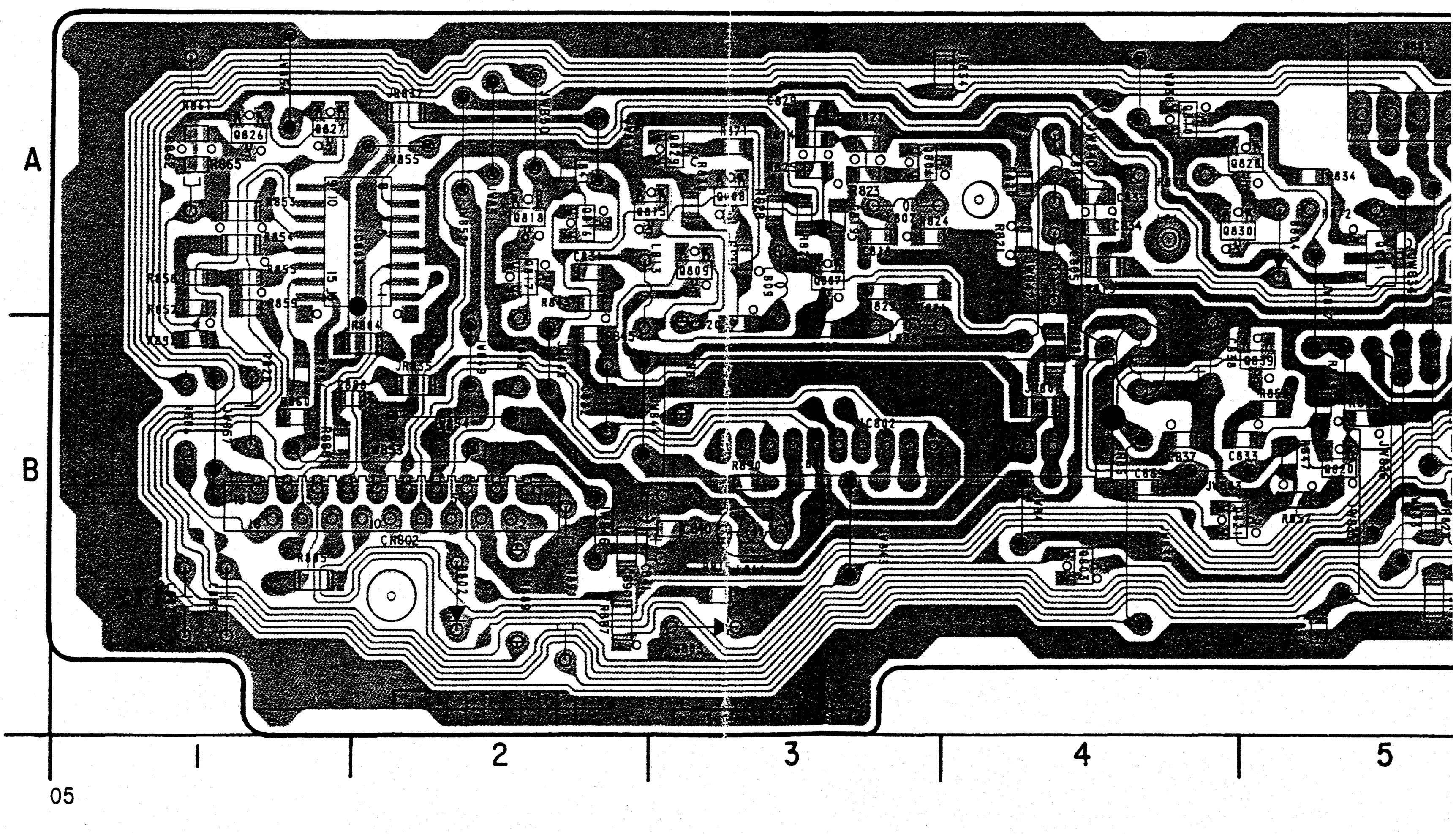
RP-149 (HEAD AMP) PRINTED WIRING BOARD

– Ref. No.: RP-149 Board; 1,000 series –

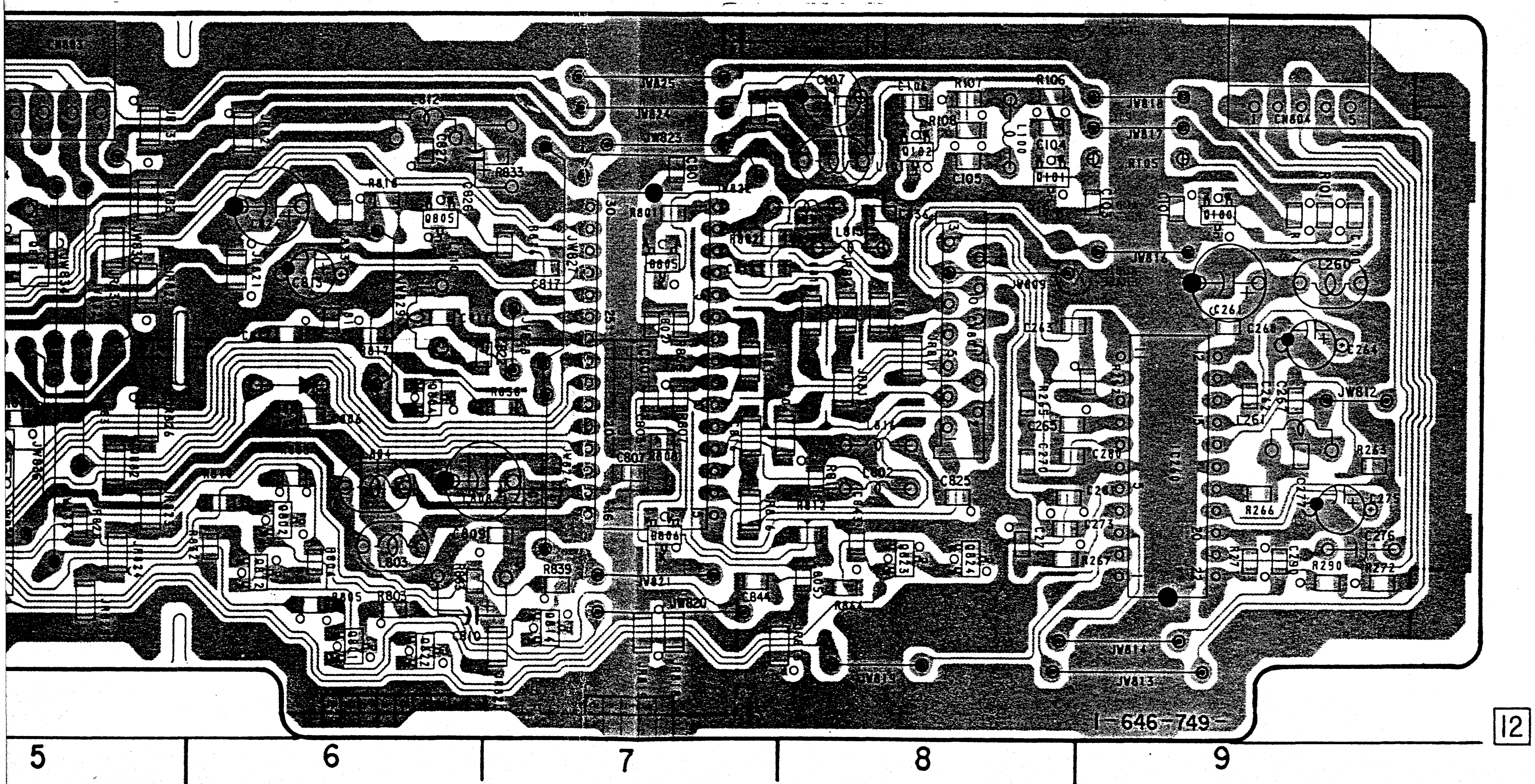
RP-149 BOARD

D801	B-6
D802	B-2
D803	B-3
D804	A-5
D805	A-7
D806	B-7
IC260	B-9
IC801	A-7
IC803	A-1
Q801	B-6
Q802	B-6
Q803	B-4
Q804	B-6
Q805	A-6
Q806	A-3
Q807	A-3
Q808	A-3
Q809	A-3
Q810	A-4
Q811	A-5
Q812	B-6
Q814	B-7
Q815	A-2
Q816	A-2
Q817	A-2
Q818	A-2
Q820	B-5
Q821	B-5
Q822	B-6
Q823	B-8
Q824	B-8
Q826	A-1
Q827	A-1
Q828	A-5
Q830	A-4
Q839	B-5

RP-149 BOARD



	< DIODE >	
D805	8-719-400-18	MA152WK
D806	8-719-400-18	MA152WK
	< IC >	
IC803	8-759-097-80	HD49783FP
	< TRANSISTOR >	
Q100	8-729-216-22	2SA1162
Q101	8-729-216-22	2SA1162
Q102	8-729-421-19	UN2213
Q802	8-729-230-49	2SC2712-G
Q803	8-729-424-18	UN2113
Q804	8-729-230-49	2SC2712-G
Q805	8-729-216-22	2SA1162
Q806	8-729-216-22	2SA1162
Q807	8-729-230-49	2SC2712-G
Q809	8-729-230-49	2SC2712-G
Q810	8-729-421-19	UN2213
Q811	8-729-301-98	2SB1000A-L
Q812	8-729-230-49	2SC2712-G
Q814	8-729-421-19	UN2213
Q822	8-729-216-22	2SA1162
Q823	8-729-216-22	2SA1162
Q824	8-729-216-22	2SA1162
Q826	8-729-424-18	UN2113
Q827	8-729-421-19	UN2213
Q828	8-729-421-19	UN2213
Q830	8-729-421-19	UN2213


CN604
C260
C264
JW812
R263
R266
R290
R272
C276
JW814
JW813
R106
R107
C107
C105
JW825
JW824
JW823
R833
R839
JW820
JW821
C844
1-646-749
12
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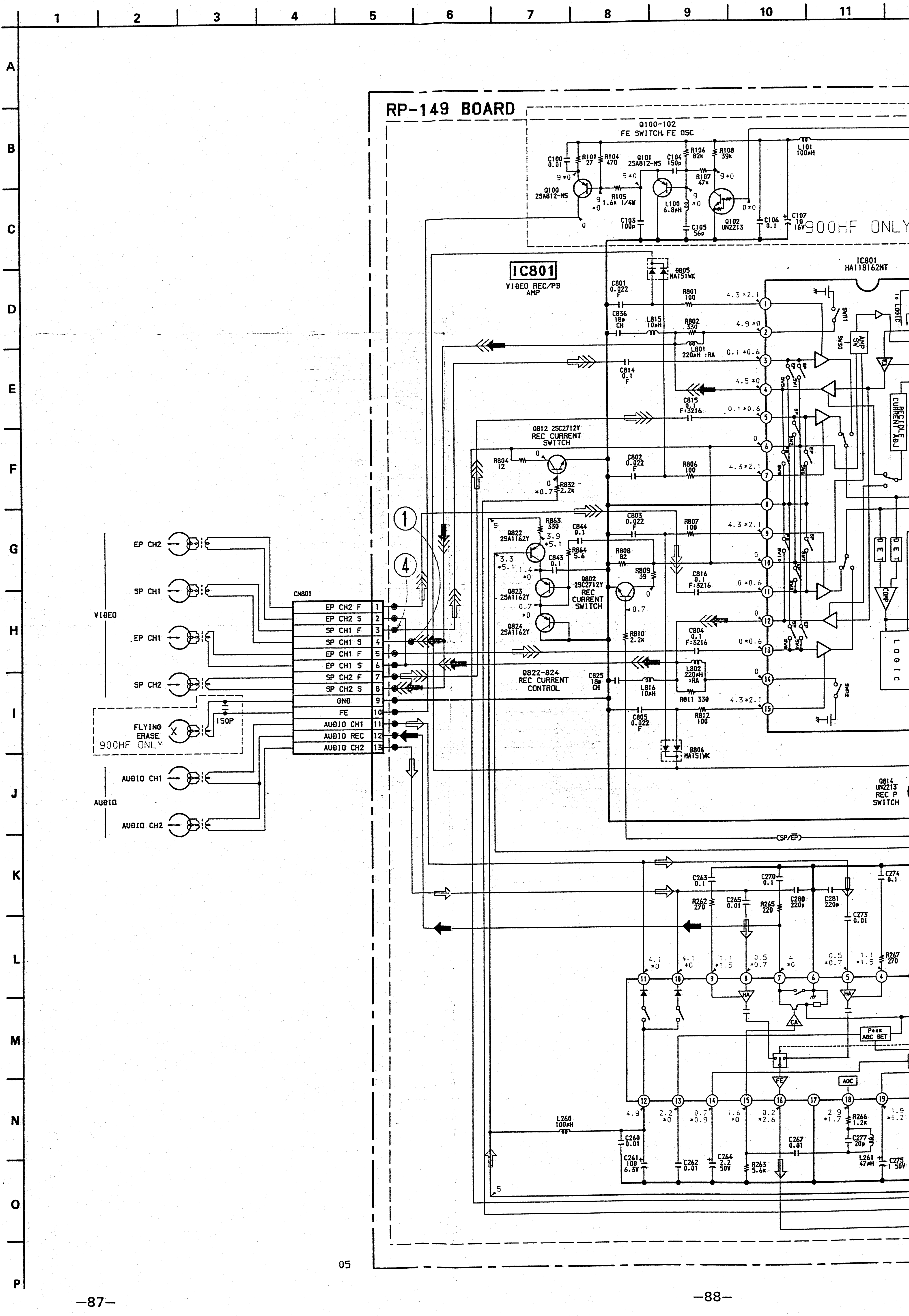
8
9

RP-149 (HEAD AMP) SCHEMATIC DIAGRAM

– Ref. No.: RP-149 Board; 1,000 series –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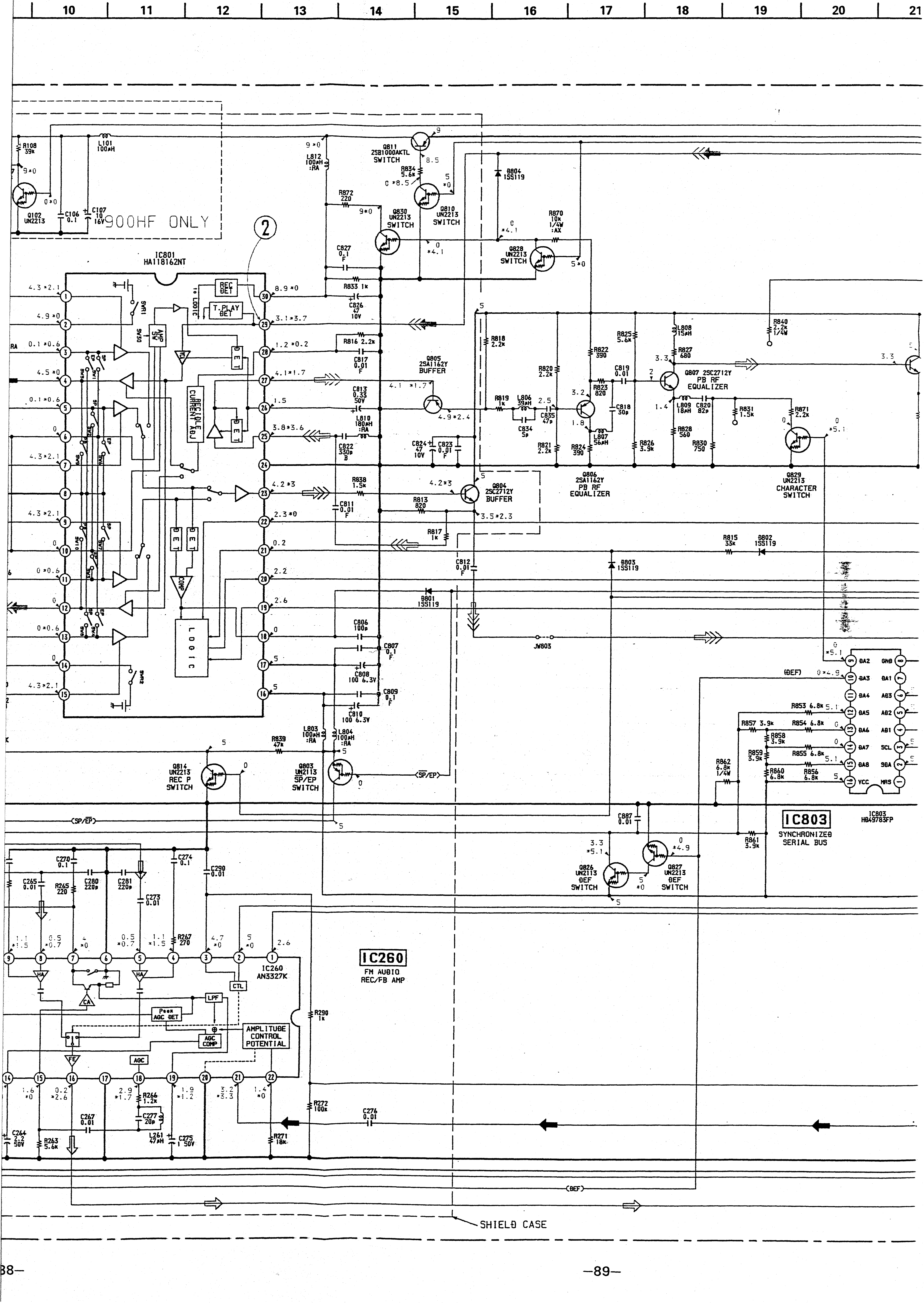
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
RP-149 BOARD
Q100-102
FE SWITCH, FE OSC
C100 0.01
R101 27
R104 470
Q101 2SA812-M5
C104 150p
R106 82k
R108 39k
L101 100μH
Q100 2SA812-M5
R105 1.6k 1/4W
L100 6.8μH
R107 47k
Q102 UN2213
C103 100p
C105 56p
C106 0.1
C107 10 16V
900HF ONLY
IC801
VIDEO REC/PB AMP
IC801 HA118162NT
D805 MA151WK
C801 0.022 F
R801 100
C836 18p CH
L815 10μH
R802 330
L801 220μH :RA
C814 0.1 F
C815 0.1 F:3216
Q812 2SC2712Y
REC CURRENT SWITCH
R804 12
R832 2.2k
C802 0.022 F
R806 100
C803 0.022 F
R807 100
R863 330
C844 0.1
Q822 2SA1162Y
R864 5.6
C843 0.1
R808 82
R809 39
Q823 2SA1162Y
Q802 2SC2712Y
REC CURRENT SWITCH
Q824 2SA1162Y
C816 0.1 F:3216
R810 2.2k
C804 0.1 F:3216
Q822-824
REC CURRENT CONTROL
C825 18p CH
L816 10μH
L802 220μH :RA
R811 330
C805 0.022 F
R812 100
D806 MA151WK
Q814 UN2213
REC P SWITCH
RECIPLE CURRENT ADJ
AMP SW
LOGIC
COMP
DET
(SP/EP)
EP CH2
SP CH1
VIDEO
EP CH1
SP CH2
FLYING ERASE
900HF ONLY
150P
AUDIO CH1
AUDIO
AUDIO CH2
CN801
EP CH2 F 1
EP CH2 S 2
SP CH1 F 3
SP CH1 S 4
EP CH1 F 5
EP CH1 S 6
SP CH2 F 7
SP CH2 S 8
GND 9
FE 10
AUDIO CH1 11
AUDIO REC 12
AUDIO CH2 13
①
④
C263 0.1
C270 0.1
C274 0.1
R262 270
C265 0.01
R265 220
C280 220p
C281 220p
C273 0.01
R267 270
HA
CA
Peak AGC DET
AGC
FE
L260 100μH
C260 0.01
C261 100 6.3V
C262 0.01
C264 2.2 50V
R263 5.6k
C267 0.01
R266 1.2k
C277 20p
L261 47μH
C275 1 50V
05


10
11
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19
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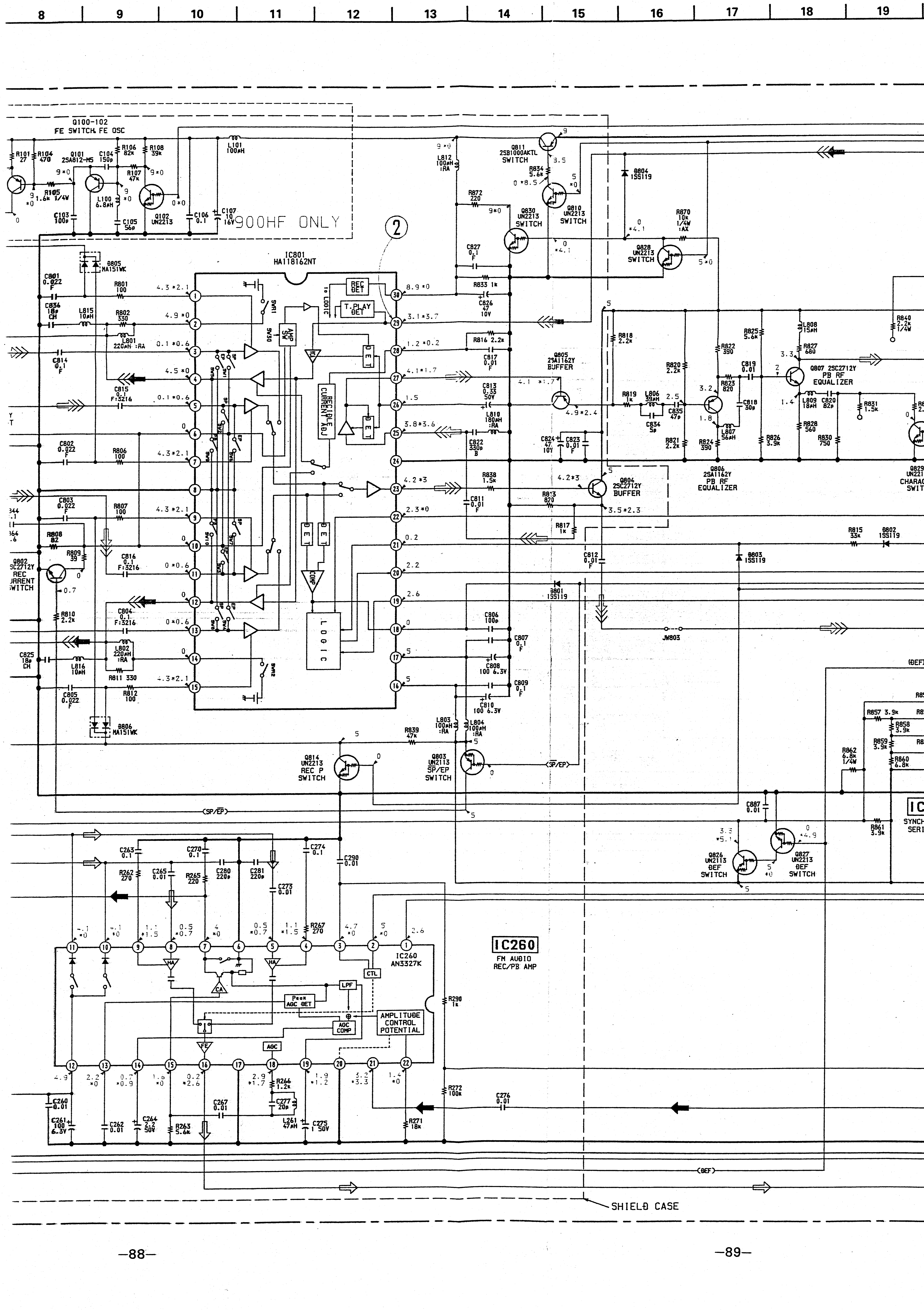
21
IC801
HA118162NT
900HF ONLY
②
REC DET
T.PLAY DET
RECIPLE CURRENT ADJ
LOGIC
AMP SW
Q102 UN2213
L101 100μH
R108 39k
C106 0.1
C107 10 16V
Q811 2SB1000AKTL SWITCH
Q810 UN2213 SWITCH
Q830 UN2213 SWITCH
Q828 UN2213 SWITCH
L812 100μH :RA
R834 5.6k
R872 220
D804 1SS119
R870 10k 1/4W :AX
C827 0.1 F
R833 1k
C826 47 10V
R816 2.2k
C817 0.01 F
C813 0.33 50V
L810 180μH :RA
C822 330p B
C824 47 10V
C823 0.01 F
Q805 2SA1162Y BUFFER
R838 1.5k
C811 0.01 F
R813 820
R817 1k
Q804 2SC2712Y BUFFER
R818 2.2k
R819 1k
L806 39μH
C834 5p
C835 47p
R820 2.2k
R821 2.2k
R822 390
R823 820
C818 30p
L807 56μH
R824 390
Q806 2SA1162Y PB RF EQUALIZER
R825 5.6k
C819 0.01
R826 3.9k
L808 15μH
R827 680
Q807 2SC2712Y PB RF EQUALIZER
L809 18μH
C820 82p
R828 560
R830 750
R831 1.5k
R871 2.2k
R840 2.2k 1/4W
Q829 UN2213 CHARACTER SWITCH
R815 33k
D802 1SS119
D803 1SS119
C812 0.01 F
D801 1SS119
C806 100p
C807 0.1 F
C808 100 6.3V
C809 0.1 F
C810 100 6.3V
JW803
L803 100μH :RA
L804 100μH :RA
R839 47k
Q814 UN2213 REC P SWITCH
Q803 UN2113 SP/EP SWITCH
(SP/EP)
(DEF)
R853 6.8k
R857 3.9k
R854 6.8k
R858 3.9k
R859 3.9k
R855 6.8k
R862 6.8k 1/4W
R860 6.8k
R856 6.8k
R861 3.9k
C887 0.01
Q826 UN2113 DEF SWITCH
Q827 UN2213 DEF SWITCH
DA2
DA3
DA4
DA5
DA6
DA7
DA8
VCC
GND
DA1
AD3
AD2
AD1
SCL
SDA
MRS
IC803
SYNCHRONIZED SERIAL BUS
IC803 HD49783FP
C270 0.1
C274 0.1
C290 0.01
C265 0.01
R265 220
C280 220p
C281 220p
C273 0.01
R267 270
IC260 AN3327K
IC260
FM AUDIO REC/PB AMP
HA
CA
CTL
LPF
Peak AGC DET
AGC COMP
AMPLITUDE CONTROL POTENTIAL
FE
AGC
R290 1k
R266 1.2k
C277 20p
C267 0.01
L261 47μH
C275 1 50V
R272 100k
C276 0.01
R271 18k
C264 2.2 50V
R263 5.6k
SHIELD CASE


8
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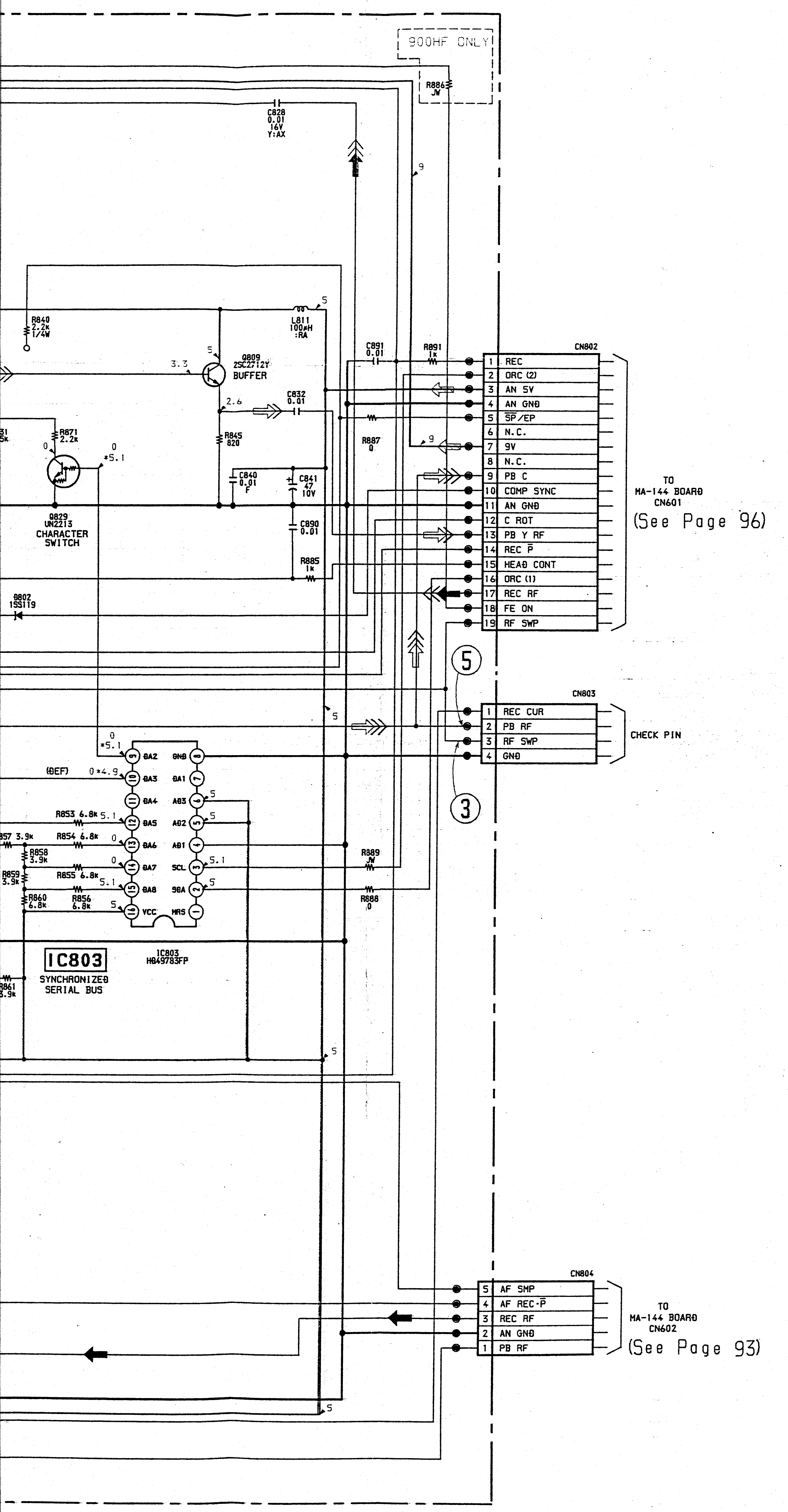
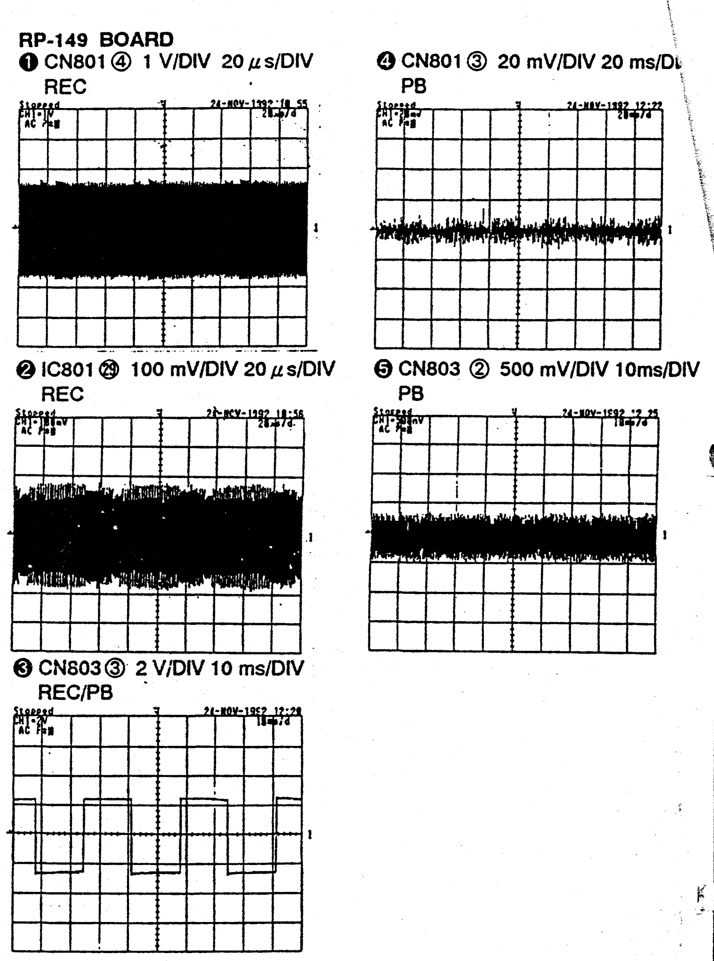
18
19
Q100-102
FE SWITCH, FE OSC
900HF ONLY
Q101 2SA812-M5
Q102 UN2213
IC801
HA118162NT
REC DET
T.PLAY DET
AMP SW
RECIPLE CURRENT ADJ
LOGIC
Q805 MA151WK
Q806 MA151WK
Q802 2SC2712Y REC CURRENT SWITCH
Q811 2SB1000AKTL SWITCH
Q830 UN2213 SWITCH
Q810 UN2213 SWITCH
Q828 UN2213 SWITCH
D804 1SS119
Q805 2SA1162Y BUFFER
Q804 2SC2712Y BUFFER
Q806 2SA1162Y PB RF EQUALIZER
Q807 2SC2712Y PB RF EQUALIZER
D801 1SS119
D802 1SS119
D803 1SS119
JW803
Q814 UN2213 REC P SWITCH
Q803 UN2113 SP/EP SWITCH
(SP/EP)
Q826 UN2113 DEF SWITCH
Q827 UN2213 DEF SWITCH
IC260
FM AUDIO REC/PB AMP
IC260 AN3327K
CTL
LPF
Peak AGC DET
AGC COMP
AMPLITUDE CONTROL POTENTIAL
AGC
FE
HA
CA
(DEF)
SHIELD CASE
②


900HF ONLY
R886 JW
C828 0.01 16V Y:AX
L811 100µH :RA
R840 2.2k 1/4W
Q809 2SC2712Y BUFFER
C832 0.01
R845 820
C840 0.01 F
C841 47 10V
C890 0.01
R885 1k
C891 0.01
R891 1k
R887 0
R871 2.2k
Q829 UN2213 CHARACTER SWITCH
D802 1SS119
CN802
1 REC
2 DRC (2)
3 AN 5V
4 AN GND
5 SP/EP
6 N.C.
7 9V
8 N.C.
9 PB C
10 COMP SYNC
11 AN GND
12 C ROT
13 PB Y RF
14 REC P̄
15 HEAD CONT
16 DRC (1)
17 REC RF
18 FE ON
19 RF SWP
TO MA-144 BOARD CN601 (See Page 96)
CN803
1 REC CUR
2 PB RF
3 RF SWP
4 GND
CHECK PIN
⑤
③
(DEF)
R853 6.8k
R854 6.8k
R855 6.8k
R856 6.8k
R857 3.9k
R858 3.9k
R859 3.9k
R860 6.8k
R861 3.9k
R889 JW
R888 0
DA2 GND DA3 DA1 DA4 AB3 DA5 AB2 DA6 AB1 DA7 SCL DA8 SDA VCC MRS
IC803
IC803 HD49783FP
SYNCHRONIZED SERIAL BUS
CN804
5 AF SMP
4 AF REC-P̄
3 REC RF
2 AN GND
1 PB RF
TO MA-144 BOARD CN602 (See Page 93)

RP-149 BOARD


❶ CN801④ 1 V/DIV 20 µs/DIV REC

❷ IC801㉙ 100 mV/DIV 20 µs/DIV REC

❸ CN803③ 2 V/DIV 10 ms/DIV REC/PB

❹ CN801③ 20 mV/DIV 20 ms/DI PB

❺ CN803 ② 500 mV/DIV 10ms/DIV PB

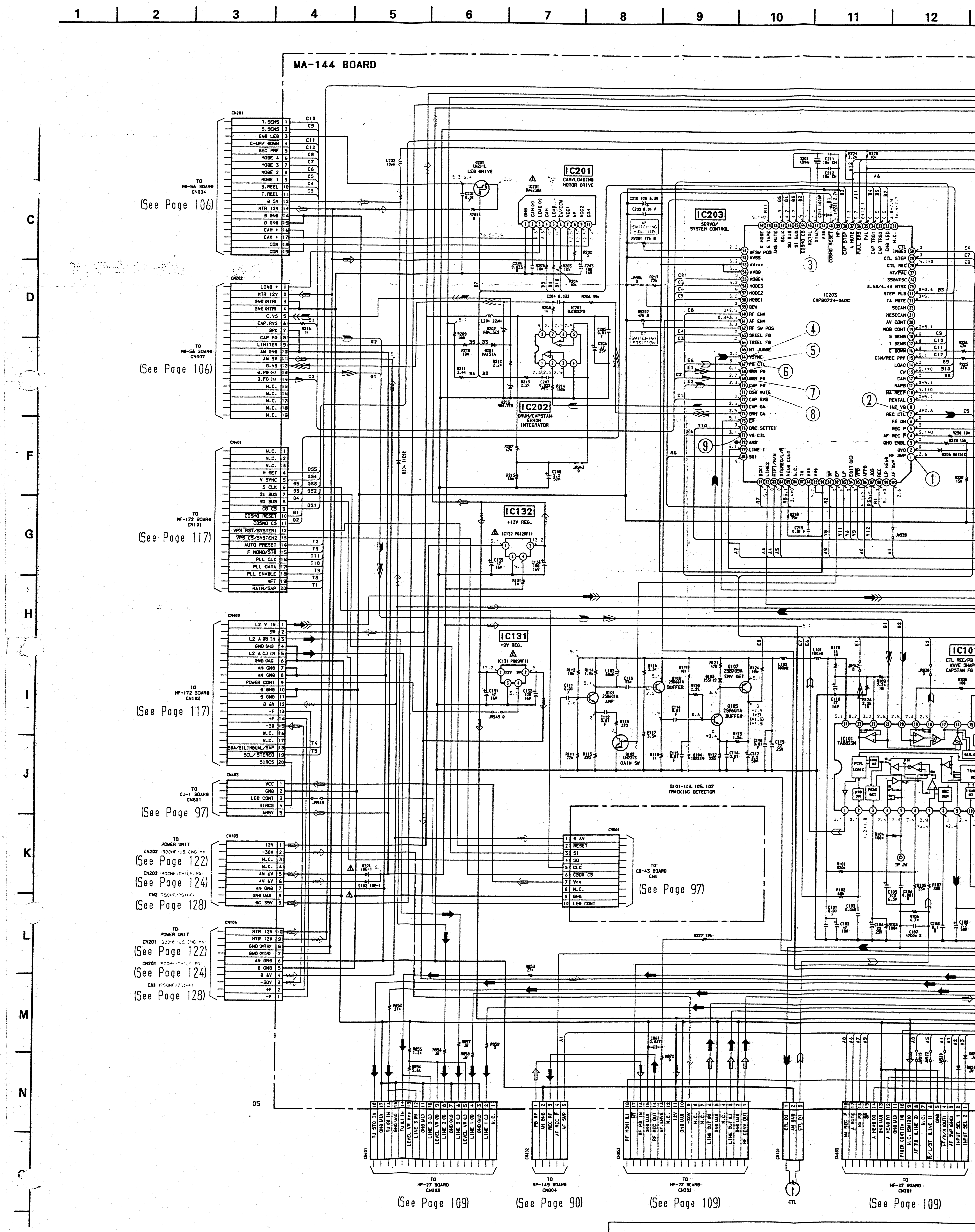
No mark : COMMON (REC)
* : PB
# : Impossible to measure the voltage at the marked points.

- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

44 (VIDEO, SERVO, SYSTEM CONTROL, AUDIO), ST-52 (VIDEO) SCHEMATIC DIAGRAM • See pages 101 for waveforms.

. No.: MA-144, ST-52 Boards; 2,000 series –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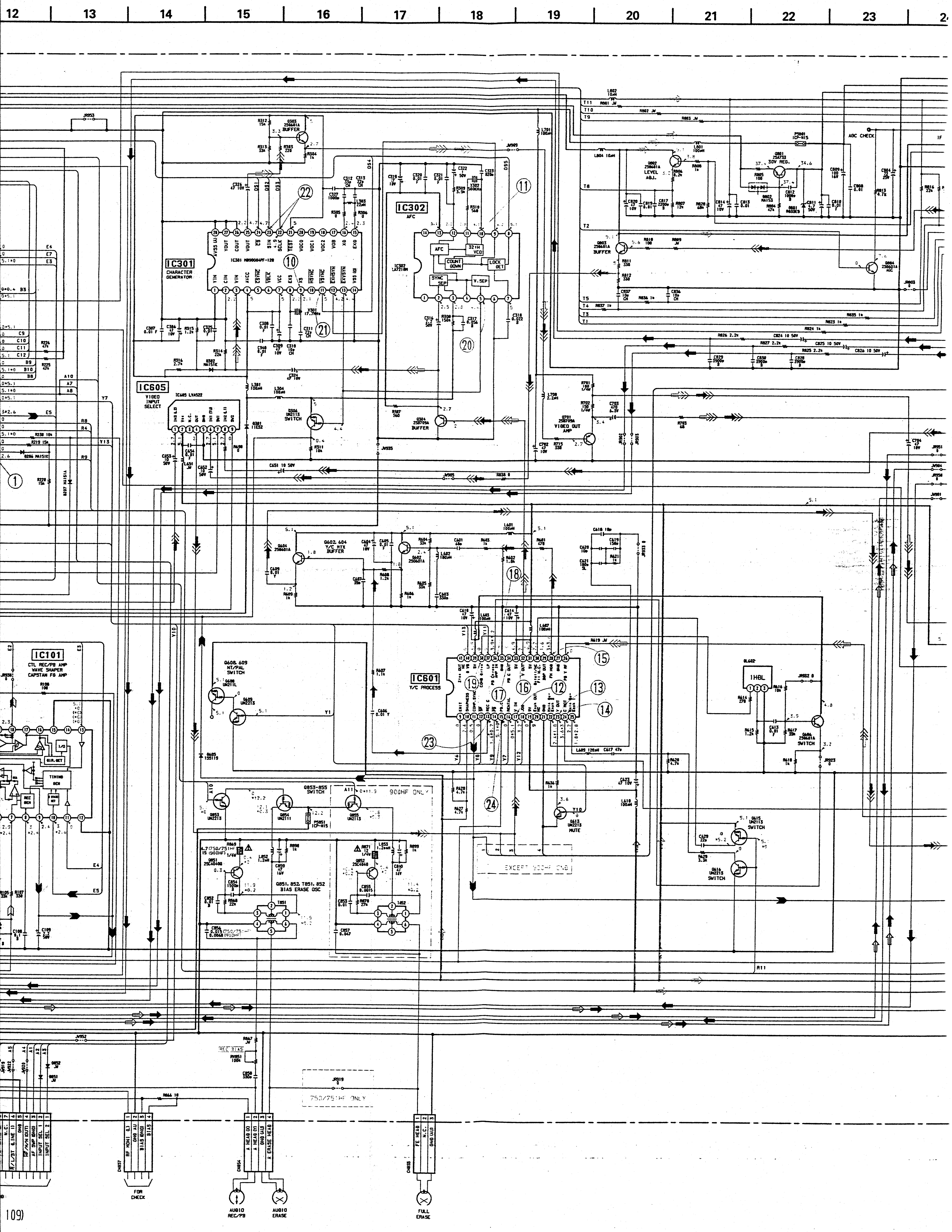
K
L
M
N
MA-144 BOARD
CN201
TO MB-56 BOARD CN004
(See Page 106)
CN202
TO MB-56 BOARD CN007
(See Page 106)
CN401
TO HF-172 BOARD CN101
(See Page 117)
CN402
TO HF-172 BOARD CN102
(See Page 117)
CN403
TO CJ-1 BOARD CN801
(See Page 97)
CN103
TO POWER UNIT
CN202 (900HF:US, CND, MX)
(See Page 122)
CN202 (900HF:CHILE, PX)
(See Page 124)
CN2 (750HF/751HF)
(See Page 128)
CN104
TO POWER UNIT
CN201 (900HF:US, CND, MX)
(See Page 122)
CN201 (900HF:CHILE, PX)
(See Page 124)
CN1 (750HF/751HF)
(See Page 128)
IC201
CAM/LOADING MOTOR DRIVE
IC201 BA6238A
Q201 UN2211L LED DRIVE
IC202
DRUM/CAPSTAN ERROR INTEGRATOR
IC202 TL082CPS
IC203
SERVO/SYSTEM CONTROL
IC203 CXP80724-060Q
AF SWITCHING POSITION
RF SWITCHING POSITION
IC132
+12V REG.
IC132 PQ12RF11
IC131
+5V REG.
IC131 PQ05RF11
Q101 2SC2785 AMP
Q103 2SD601A BUFFER
Q105 2SD601A BUFFER
Q107 2SB709A ENV DET
Q102 UN2213 GAIN SW
Q101-103, 105, 107 TRACKING DETECTOR
IC101
CTL REC/PB WAVE SHAPING CAPSTAN FG
IC101 TA8823N
CN001
TO CB-43 BOARD CN1
(See Page 97)
CN951
TO HF-27 BOARD CN203
(See Page 109)
CN402
TO RP-149 BOARD CN804
(See Page 90)
CN952
TO HF-27 BOARD CN202
(See Page 109)
CN101
CTL
CN953
TO HF-27 BOARD CN201
(See Page 109)

VIDEO SERVO SYSTEM CONTRO



12
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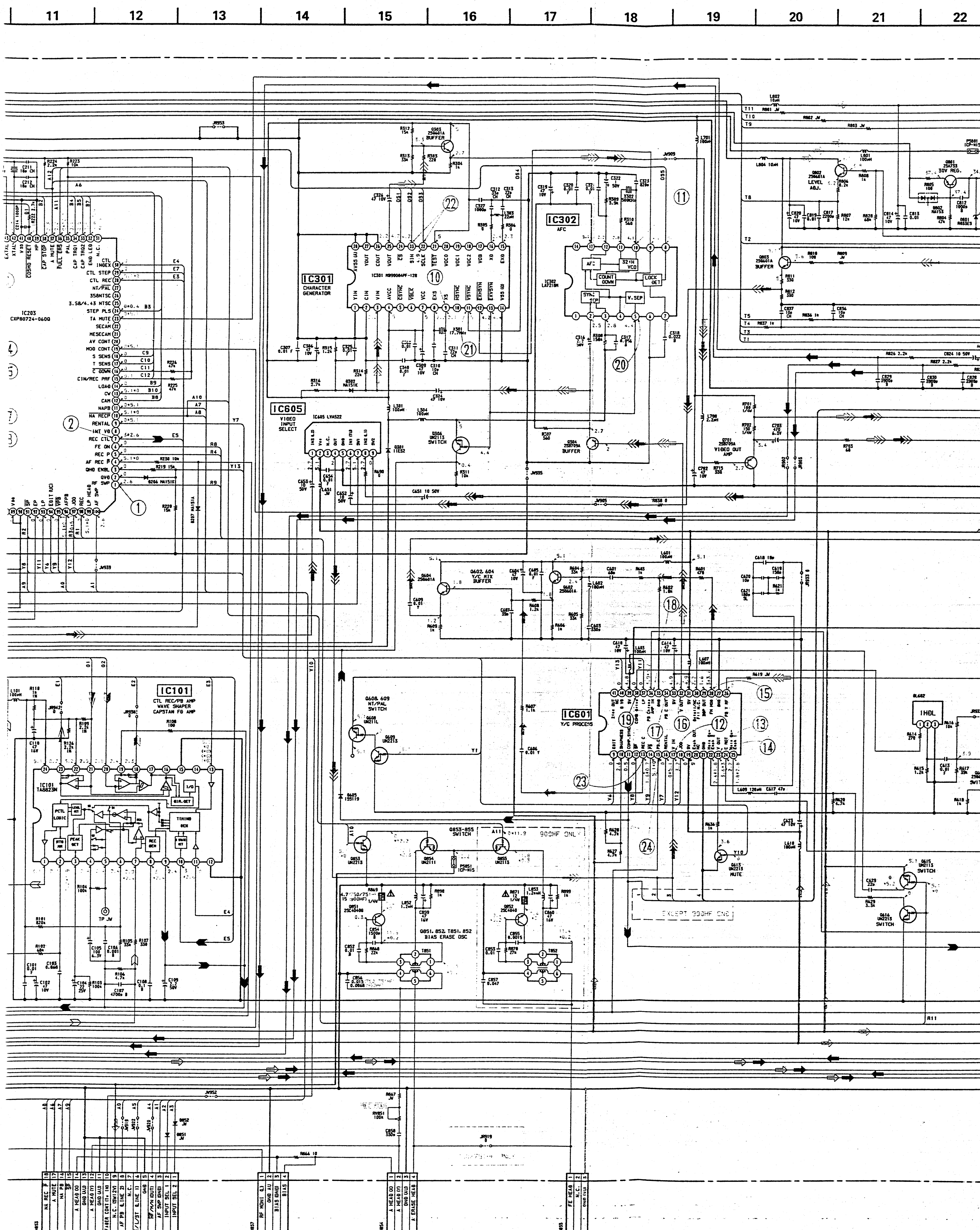
23
IC301
CHARACTER GENERATOR
IC301 MB90084PF-128
IC302
AFC
IC302 LA7218M
COUNT DOWN
321H VCO
LOCK DET
SYNC SEP
V.SEP
IC605
VIDEO INPUT SELECT
IC605 LV4522
Q303 2SA601A BUFFER
Q306 UN2113 SWITCH
Q304 2SB709A BUFFER
Q701 2SB709A VIDEO OUT AMP
Q802 2SA601A LEVEL ADJ.
Q801 2SA733 30V REG.
Q803 2SA601A BUFFER
Q804 2SA601A AGC
AGC CHECK
Q602, 604 Y/C MIX BUFFER
IC601
Y/C PROCESS
Q608, 609 NT/PAL SWITCH
Q613 UN2213 MUTE
Q853-855 SWITCH
900HF ONLY
Q851, 852, T851, 852 BIAS ERASE OSC
EXCEPT 900HF ONLY
1H DL
Q606 2SA601A SWITCH
Q615 UN2113 SWITCH
Q616 UN2215 SWITCH
IC101
CTL REC/PB AMP
WAVE SHAPER
CAPSTAN FG AMP
REC BIAS
750/751HF ONLY
FOR CHECK
AUDIO REC/PB
AUDIO ERASE
FULL ERASE

109)

ONTROL, AUDIO


11
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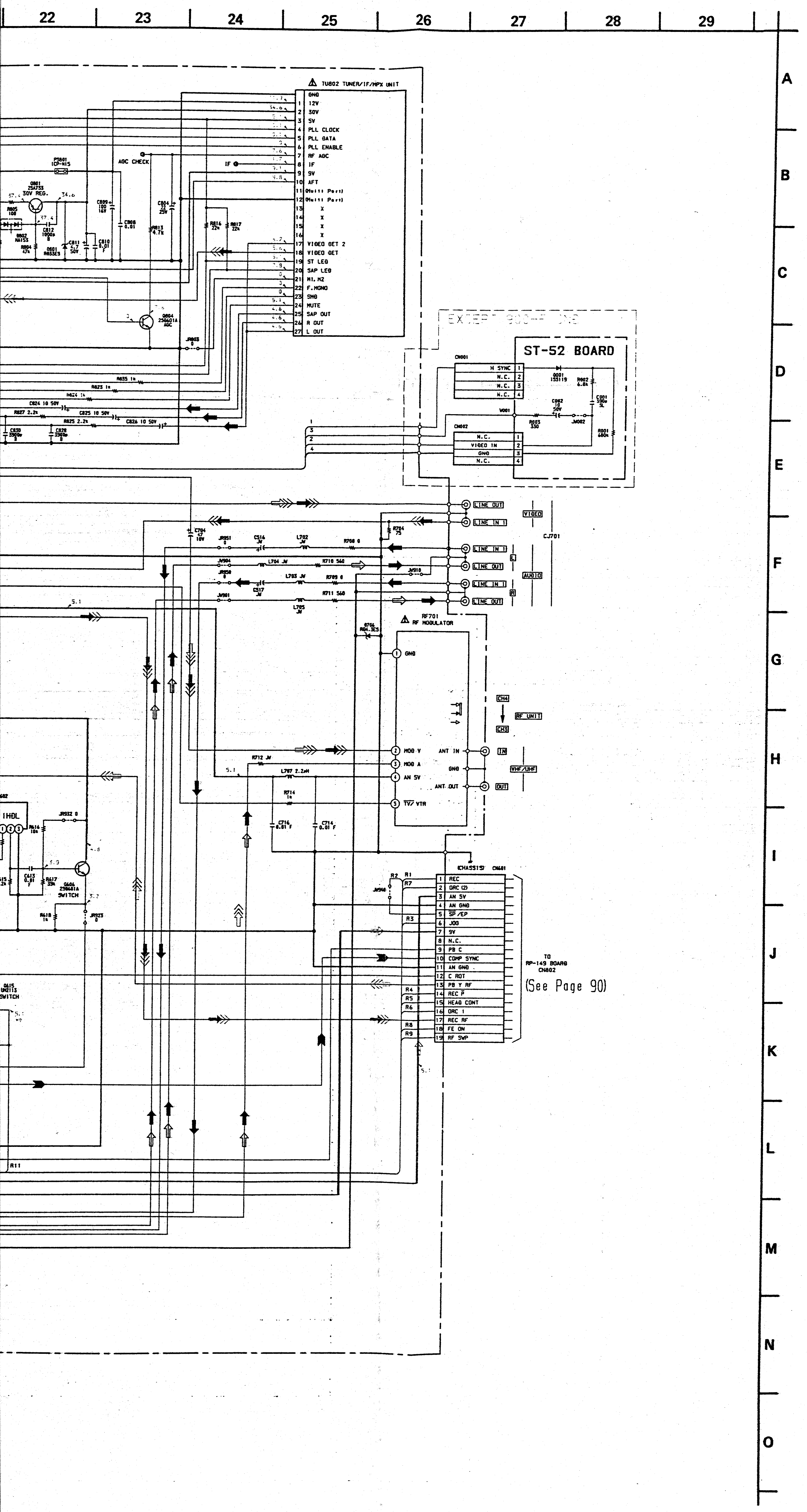
22
IC203 CXP80724-060Q
IC301 CHARACTER GENERATOR
IC301 M50806AFP-128
IC302 AFC
IC302 LA7218M
IC605 VIDEO INPUT SELECT
IC605 LV4522
IC601 Y/C PROCESS
IC101 CTL REC/PB AMP WAVE SHAPER CAPSTAN FG AMP
IC101 TA8823N
Q303 2SA601A BUFFER
Q304 2SB709A BUFFER
Q306 UN2213 SWITCH
Q602, 604 Y/C MIX BUFFER
Q608, 609 NT/PAL SWITCH
Q701 2SB709A VIDEO OUT AMP
Q802 2SA601A LEVEL ADJ.
Q801 2SA733 30V REG.
Q803 2SA601A BUFFER
Q853-855 SWITCH
Q851, 852, T851, 852 BIAS ERASE OSC
Q613 UN2213 MUTE
Q615 UN2213 SWITCH
Q616 UN2213 SWITCH
900HF ONLY
EXCEPT 900HF ONLY
CN853
CN857
CN854
CN855
TO HF-27 BOARD CN201
(See Page 109)
FOR CHECK
AUDIO REC/PB
AUDIO ERASE
FULL ERASE
NA REC
A MUTE
NA PB
SP
A HEAD (Y)
GND (AU)
FADER CONT (Y+ IN)
N.C. (SW12V)
AF PB (LINE)
R/L ST (LINE)
GND
RF SWP (OUT)
INPUT SEL 1
INPUT SEL 2
RF MON
BIAS GND
BIAS
A HEAD (G)
GND (AU)
A ERASE HEAD
FE HEAD
N.C.
GND (FE)

SYSTEM CONTROL, AUDIO


22
23
24
25
26
27
28
29
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TU802 TUNER/IF/MPX UNIT
GND
1 12V
2 30V
3 5V
4 PLL CLOCK
5 PLL DATA
6 PLL ENABLE
7 RF AGC
8 IF
9 9V
10 AFT
11 (Multi Port)
12 (Multi Port)
13 X
14 X
15 X
16 X
17 VIDEO DET 2
18 VIDEO DET
19 ST LED
20 SAP LED
21 M1, M2
22 F.MONO
23 SMB
24 MUTE
25 SAP OUT
26 R OUT
27 L OUT
AGC CHECK
IF
Q801 2SA733 30V REG.
Q804 2SD601A AGC
EXCEPT
ST-52 BOARD
CN001
H SYNC
N.C.
N.C.
N.C.
CN002
N.C.
VIDEO IN
GND
N.C.
LINE OUT
LINE IN 1
LINE IN 1
LINE OUT
LINE IN 1
LINE OUT
VIDEO
AUDIO
L
R
CJ701
RF701 RF MODULATOR
1 GND
2 MOD V
3 MOD A
4 AN 5V
5 TV/ VTR
ANT IN
GND
ANT OUT
CH4
CH3
RF UNIT
IN
OUT
VHF/UHF
(CHASSIS) CN601
1 REC
2 DRC (2)
3 AN 5V
4 AN GND
5 SP /EP
6 JOG
7 9V
8 N.C.
9 PB C
10 COMP SYNC
11 AN GND
12 C ROT
13 PB Y RF
14 REC P
15 HEAD CONT
16 DRC 1
17 REC RF
18 FE ON
19 RF SWP
R1
R2
R3
R4
R5
R6
R7
R8
R9
R11
TO RP-149 BOARD CN802
(See Page 90)
Q606 2SD601A SWITCH
Q615 UN2113 SWITCH
IHDL

No mark : COMMON (REC)
* : PB
= : Impossible to measure the voltage at the marked points.

- **Signal path**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡⋙	➡
PB	⇨	⇨»	⇨⋙	⇨

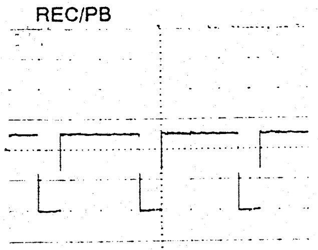
- **Signal path**

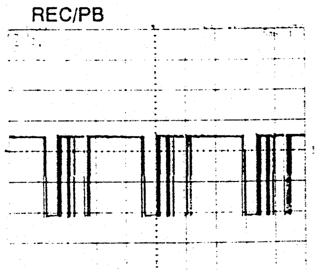
	REC	REC/PB	PB
Drum speed servo		>	
Drum phase servo		≫	
Drum servo (speed and phase)		⋙	
Capstan speed servo		⊐	
Capstan phase servo	➡»	⊐»	⊐»
Capstan servo (speed and phase)		⊐⋙	
Ref. signal	➡		⊐

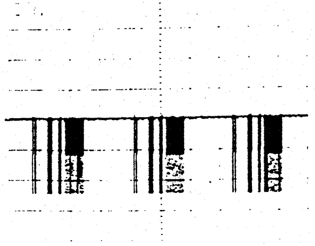
MA-144 (VIDEO, SERVO, SYSTEM CONTROL, AUDIO), CB-43, (CABLE

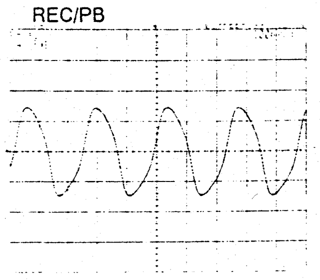
– Ref. No.: MA-144, CB-43, CJ-1, ST-52 Boards; 2,000 series –

CB-43 BOARD


❶ IC001 ③ 2 V/DIV 5 ms/DIV
REC/PB


❸ IC001 ⑧ 2 V/DIV 5 ms/DIV
REC/PB


❷ IC001 ⑦ 2 V/DIV 5 ms/DIV
REC/PB


❹ IC001 ㉚ 2 V/DIV 100 ns/DIV
REC/PB

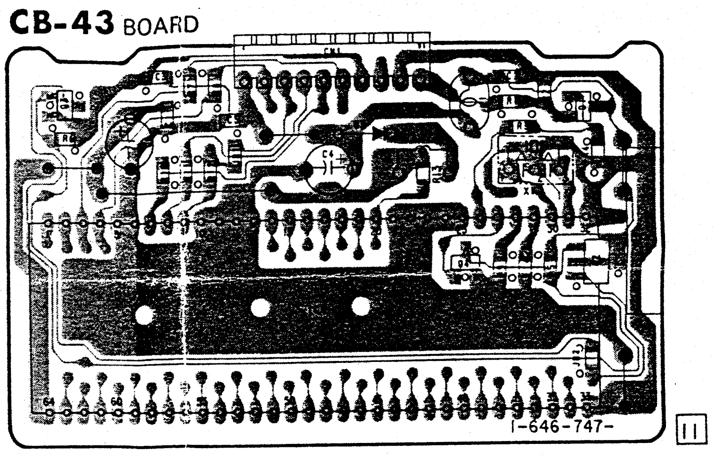
< IC >

IC001	8-752-840-28	CXP50216-005S

< TRANSISTOR >

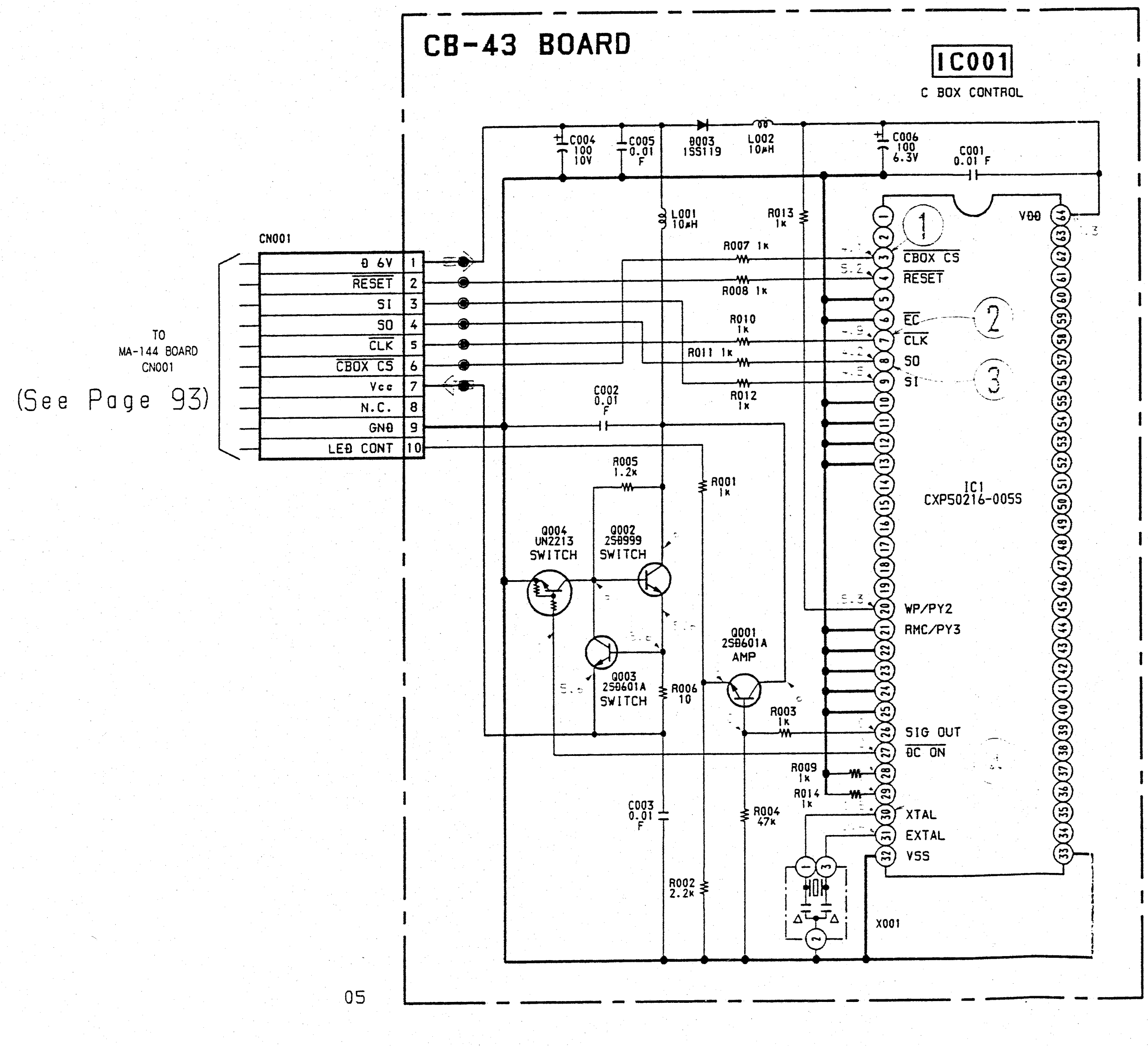
Q002	8-729-140-75	2SD999-CLCK
Q004	8-729-421-19	UN2213

CB-43 BOARD

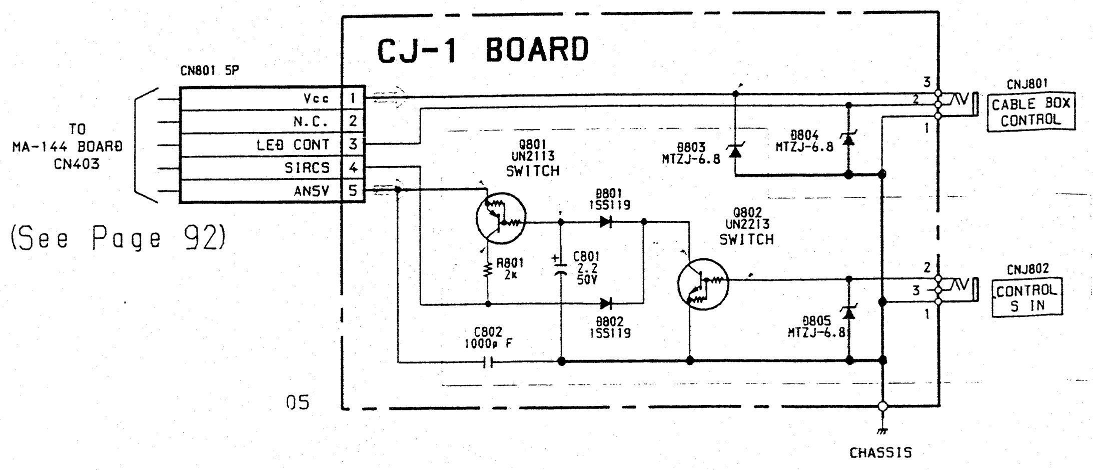


CB-43 (CABLE BOX CONTROL), CJ-1(CONTROL S IN) SCHEMATIC DIAGRAMS

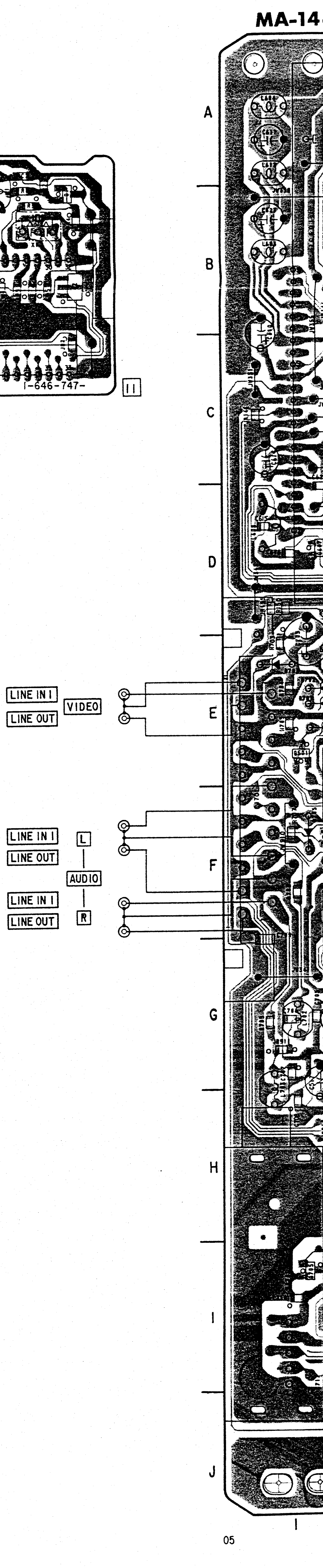
– Ref. No.: CB-43, CJ-1 Boards; 2,000 series –



CB-43 BOARD
IC001
C BOX CONTROL
CN001
8 6V
RESET
SI
SO
CLK
CBOX CS
Vcc
N.C.
GND
LED CONT
TO MA-144 BOARD CN001
(See Page 93)
C004 100 10V
C005 0.01 F
D003 1SS119
L002 10μH
C006 100 6.3V
C001 0.01 F
L001 10μH
R013 1k
R007 1k
R008 1k
R010 1k
R011 1k
R012 1k
C002 0.01 F
R005 1.2k
R001 1k
Q004 UN2213 SWITCH
Q002 2SD999 SWITCH
Q003 2SB601A SWITCH
Q001 2SB601A AMP
R006 10
R003 1k
R009 1k
R014 1k
C003 0.01 F
R004 47k
R002 2.2k
X001
VDD
CBOX CS
RESET
EC
CLK
SO
SI
IC1 CXP50216-005S
WP/PY2
RMC/PY3
SIG OUT
DC ON
XTAL
EXTAL
VSS
05



CJ-1 BOARD
CN801 5P
Vcc
N.C.
LED CONT
SIRCS
ANSV
TO MA-144 BOARD CN403
(See Page 92)
Q801 UN2113 SWITCH
D803 MTZJ-6.8
D804 MTZJ-6.8
D801 1SS119
Q802 UN2213 SWITCH
R801 2k
C801 2.2 50V
D802 1SS119
D805 MTZJ-6.8
C802 1000p F
CNJ801
CABLE BOX CONTROL
CNJ802
CONTROL S IN
CHASSIS
05



MA-14
A
B
C
D
E
F
G
H
I
J
LINE IN I
LINE OUT
VIDEO
LINE IN I
LINE OUT
L
AUDIO
LINE IN I
LINE OUT
R
1
05

IO), CB-43, (CABLE BOX CONTROL), CJ-1(CONTROL S IN), ST-52 (VIDEO) PRINTED WIRING BOARDS

ies –

CJ-1 BOARD

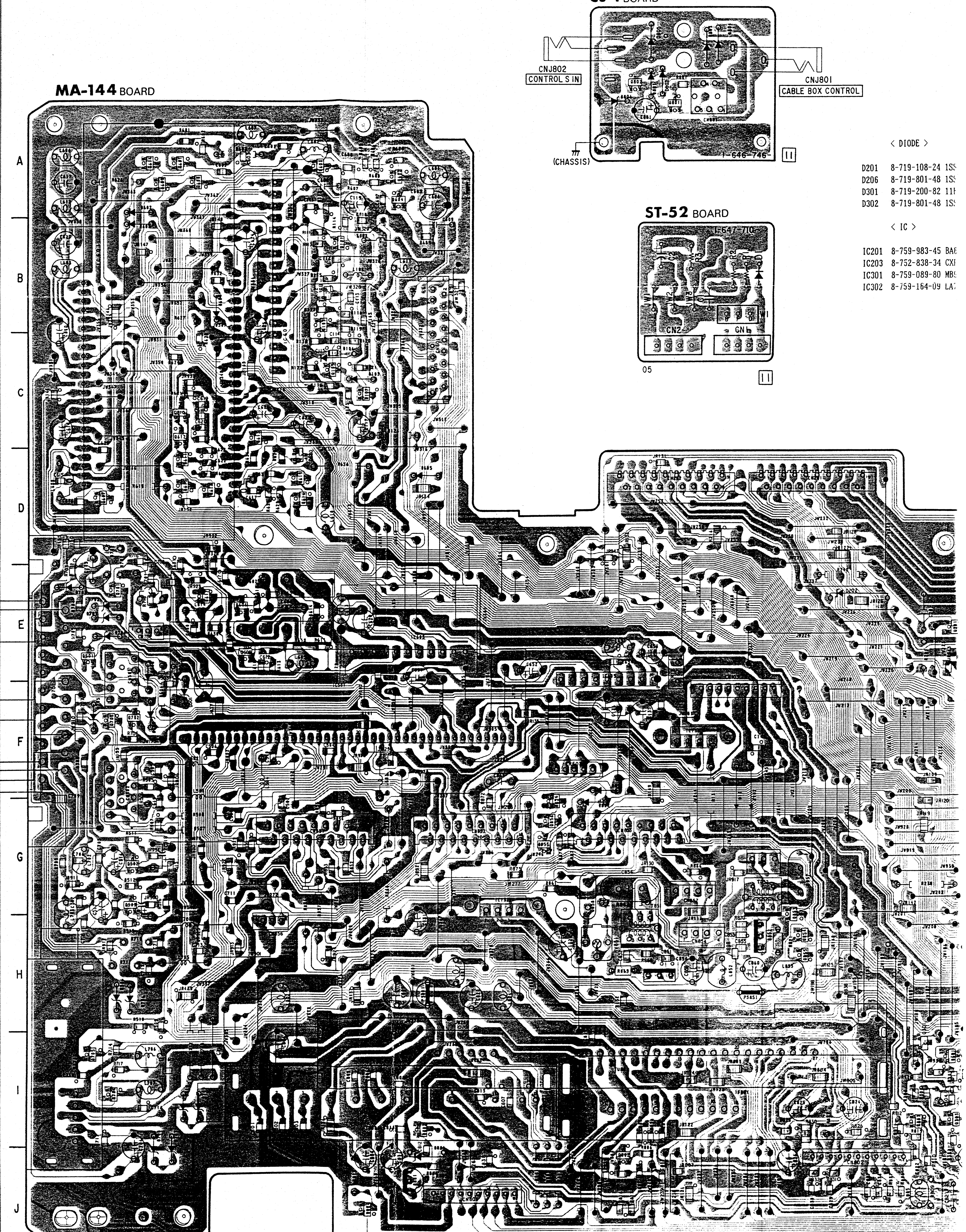
CNJ802
CONTROL S IN
CNJ801
CABLE BOX CONTROL
(CHASSIS)
1-646-746-
11

	< DIODE >	
D201	8-719-108-24	1S
D206	8-719-801-48	1S
D301	8-719-200-82	11
D302	8-719-801-48	1S
	< IC >	
IC201	8-759-983-45	BA
IC203	8-752-838-34	CX
IC301	8-759-089-80	MB
IC302	8-759-164-09	LA

ST-52 BOARD

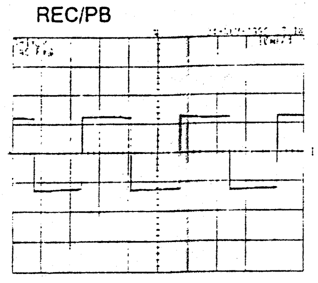
1-647-710
CN2
CN1
05
11

MA-144 BOARD

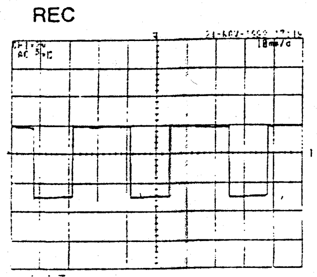

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
05

MA-144 BOARD

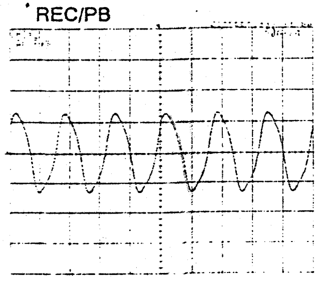
❶ IC203 ① 2 V/DIV 10 ms/DIV
REC/PB



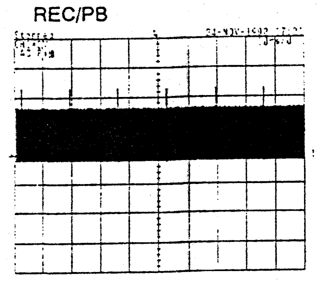
❷ IC203 ⑦ 2 V/DIV 10 ms/DIV
REC



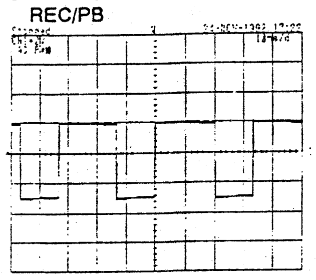
❸ IC203 ㊷ 2 V/DIV 50ns/DIV
REC/PB



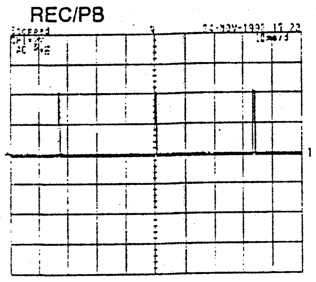
❹ IC203 (66) 2 V/DIV 10 ms/DIV
REC/PB



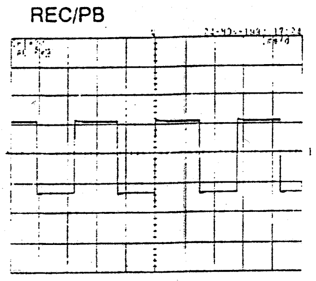
❺ IC203 (67) 2 V/DIV 10 ms/DIV
REC/PB



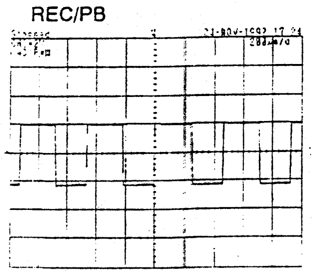
❻ IC203 (68) 2 V/DIV 10 ms/DIV
REC/PB



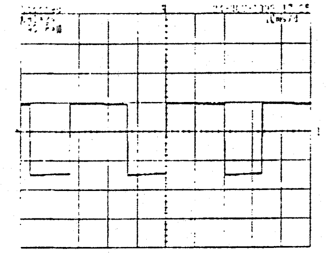
❼ IC203 (69) 2 V/DIV 1 ms/DIV
REC/PB



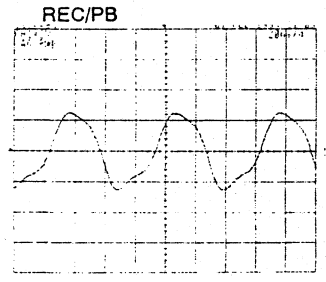
❽ IC203 (70) 2 V/DIV 200 μs/DIV
REC/PB



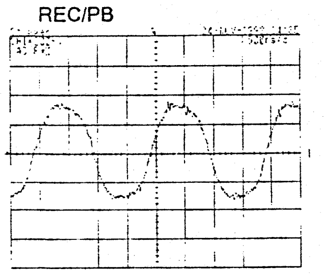
❾ IC203 (77) 2 V/DIV 10 ms/DIV
REC/PB



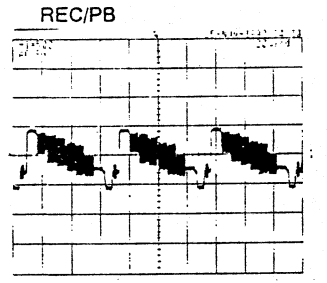
❿ IC301 ⑨ 2 V/DIV 20 ns/DIV
REC/PB



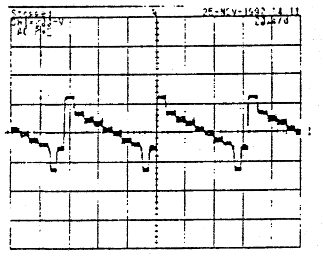
⓫ IC302 ⑩ 200 mV/DIV 500 ns/DIV
REC/PB



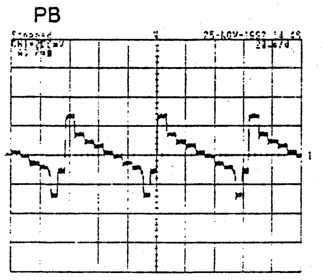
⓬ IC601 ⑰ 500 mV/DIV 20 μs/DIV
REC/PB



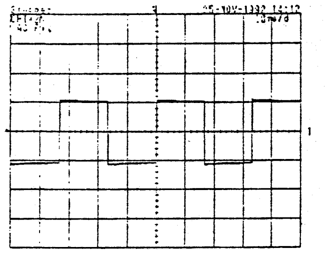
⓭ IC601 ㉓ 200 mV/DIV 20 μs/DIV
REC



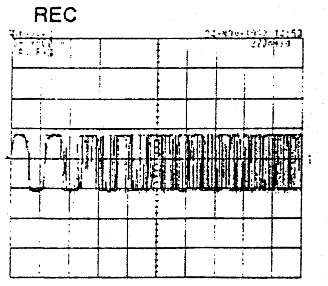
⓭ IC601 ㉓ 200 mV/DIV 20 μs/DIV
PB



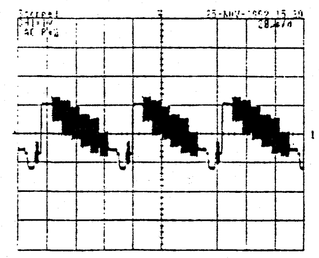
⓮ IC601 ㉔ 2 V/DIV 10 ms/DIV
REC/PB



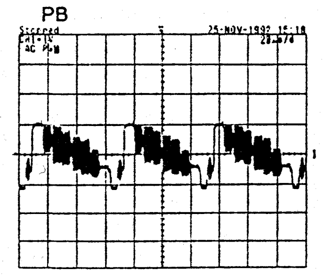
⓯ IC601 ㉘ 500 mV/DIV 200 ns/DIV
REC



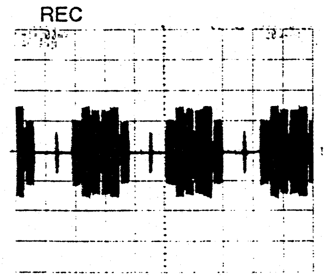
⓰ IC601 ㉜ 1 V/DIV 20 μs/DIV
REC



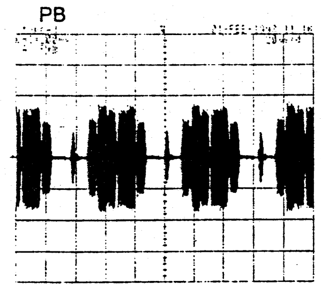
⓰ IC601 ㉜ 1 V/DIV 20 μs/DIV
PB



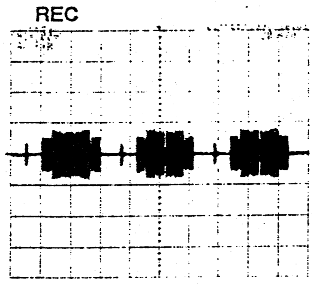
⓱ IC601 ㉞ 200 mV/DIV 20 μs/DIV
REC



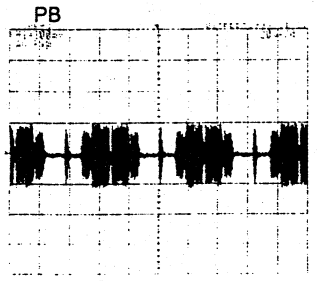
⓱ IC601 ㉞ 200 mV/DIV 20 μs/DIV
PB



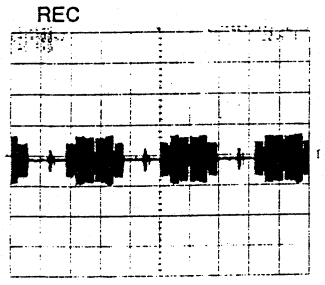
⓲ IC601 ㉟ 200 mV/DIV 20 μs/DIV
REC



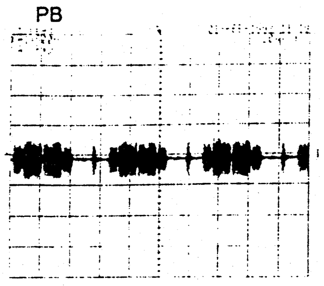
⓲ IC601 ㉟ 100 mV/DIV 20 μs/DIV
PB



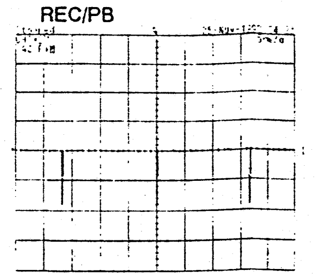
⓳ IC601 ㊳ 500 mV/DIV 20 μs/DIV
REC



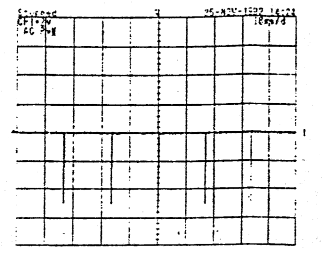
⓳ IC601 ㊳ 500 mV/DIV 20 μs/DIV
PB



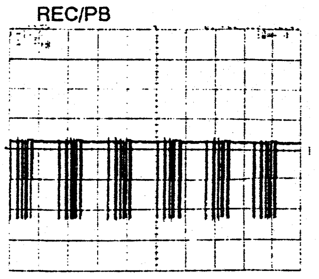
⓴ IC302 ⑤ 2 V/DIV 5 ms/DIV
REC/PB



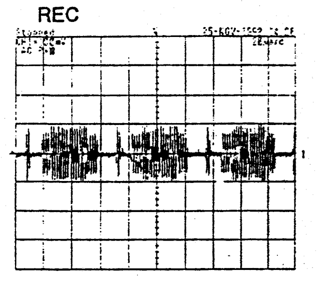
㉑ IC301 ⑪ 2 V/DIV 10 ms/DIV
REC/PB



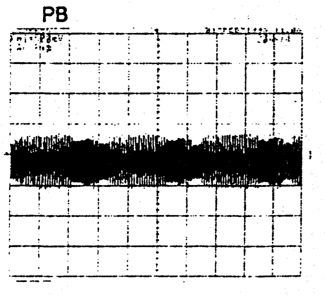
㉒ IC301 ㉒, ㉓ 2 V/DIV 10 ms/DIV
REC/PB



㉓ IC601 ⑬ 100 mV/DIV 20 μs/DIV
REC

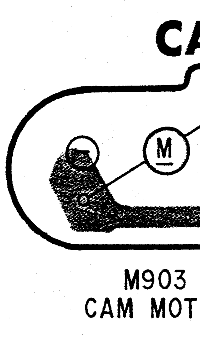


㉔ IC601 ⑮ 500 mV/DIV 20 μs/DIV
PB

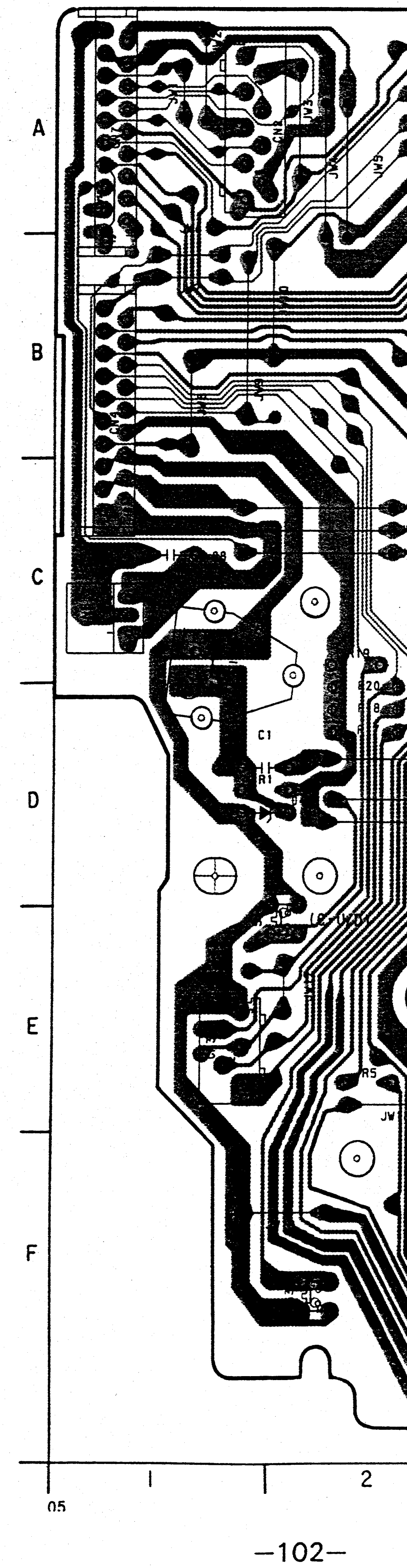


MD-56 (MECHANISM DRIVE), CA-41 (CAM MOTOR), CM

– Ref. No.: MD-56, CA-41 and CM-14 Boards; 3,000 series –



MD-56 BOARD



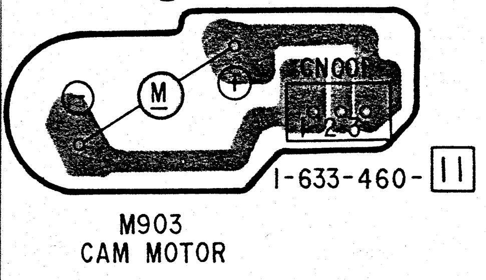
MD-56 BOARD

D1	D-5
D4	D-1
D5	D-9
D6	F-6
D7	F-5
IC2	A-5
PH1	F-4
PH2	F-6
Q1	C-1
Q2	C-9

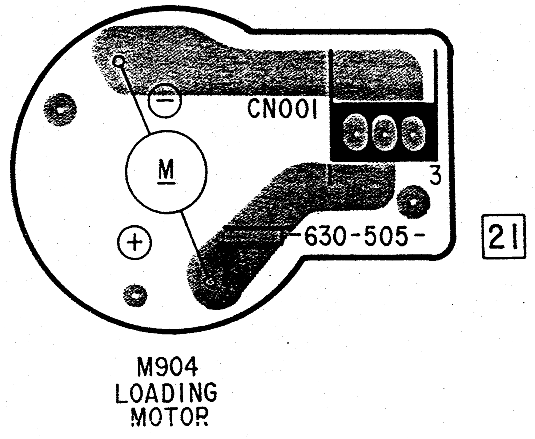
AM MOTOR), CM-14 (LOADING MOTOR) PRINTED WIRING BOARDS

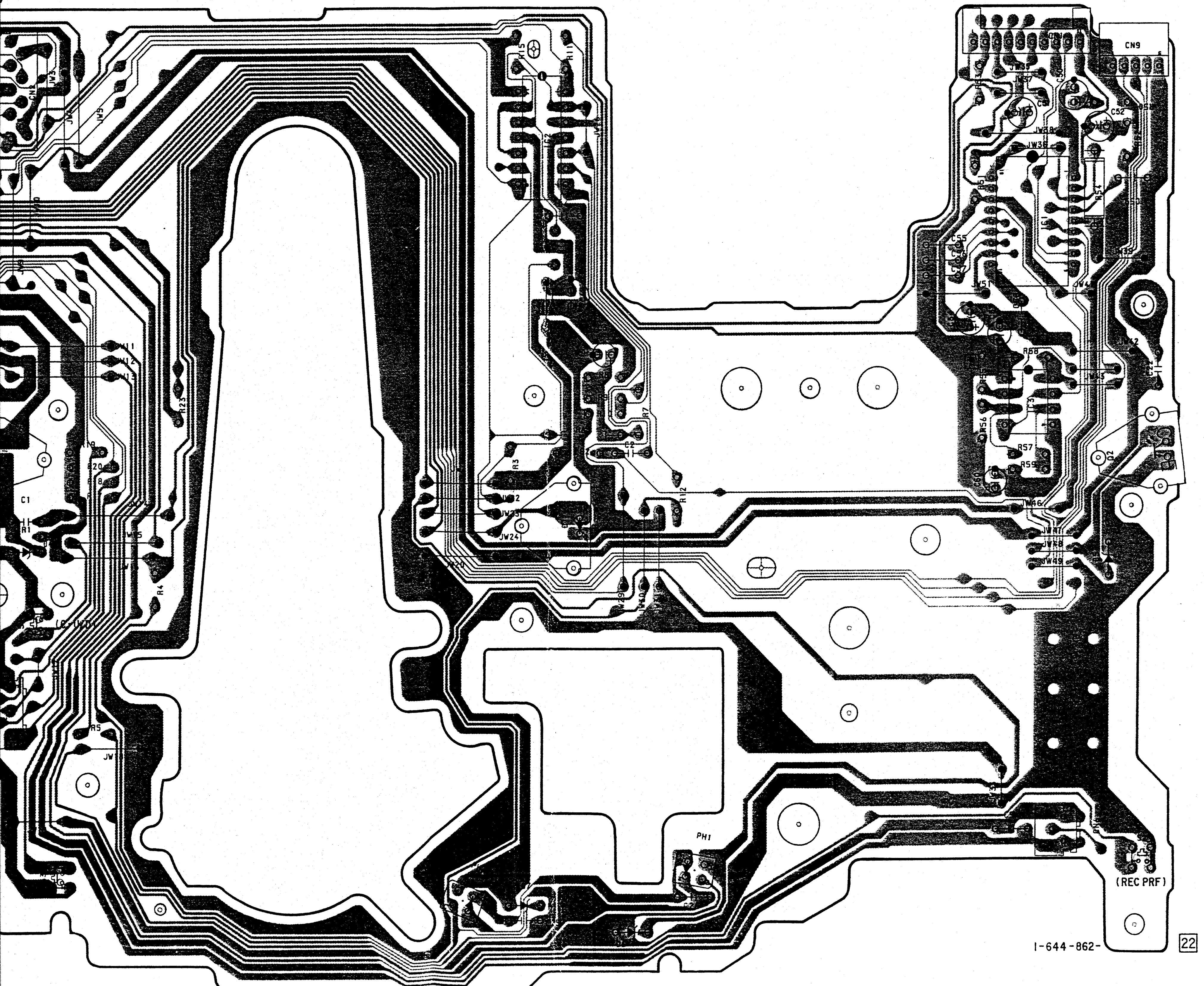
; 3,000 series –

CA-41 BOARD


CN001
1 2 3
M
1-633-460-
11
M903
CAM MOTOR

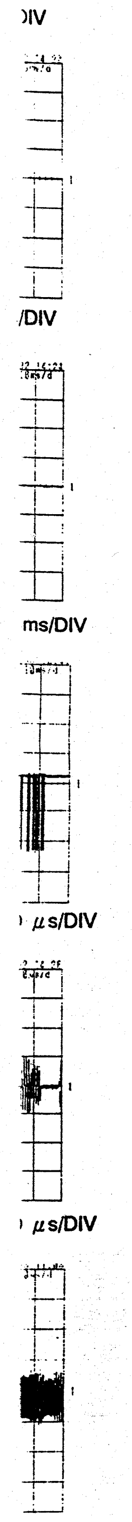
CM-14 BOARD


CN001
M
3
-630-505-
21
M904
LOADING
MOTOR

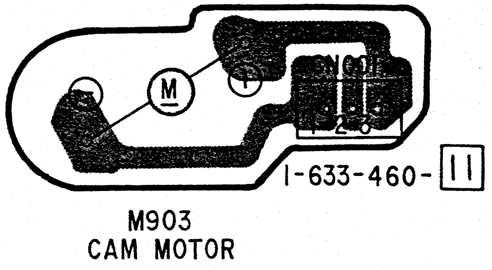

CN9
PH1
(REC PRF)
1-644-862-
22
2
3
4
5
6
7
8
9

MD-56 (MECHANISM DRIVE), CA-41 (CAM MOTOR), CM-14 (LOADING MOTOR) PRINTED WIRING BOARDS

– Ref. No.: MD-56, CA-41 and CM-14 Boards; 3,000 series –

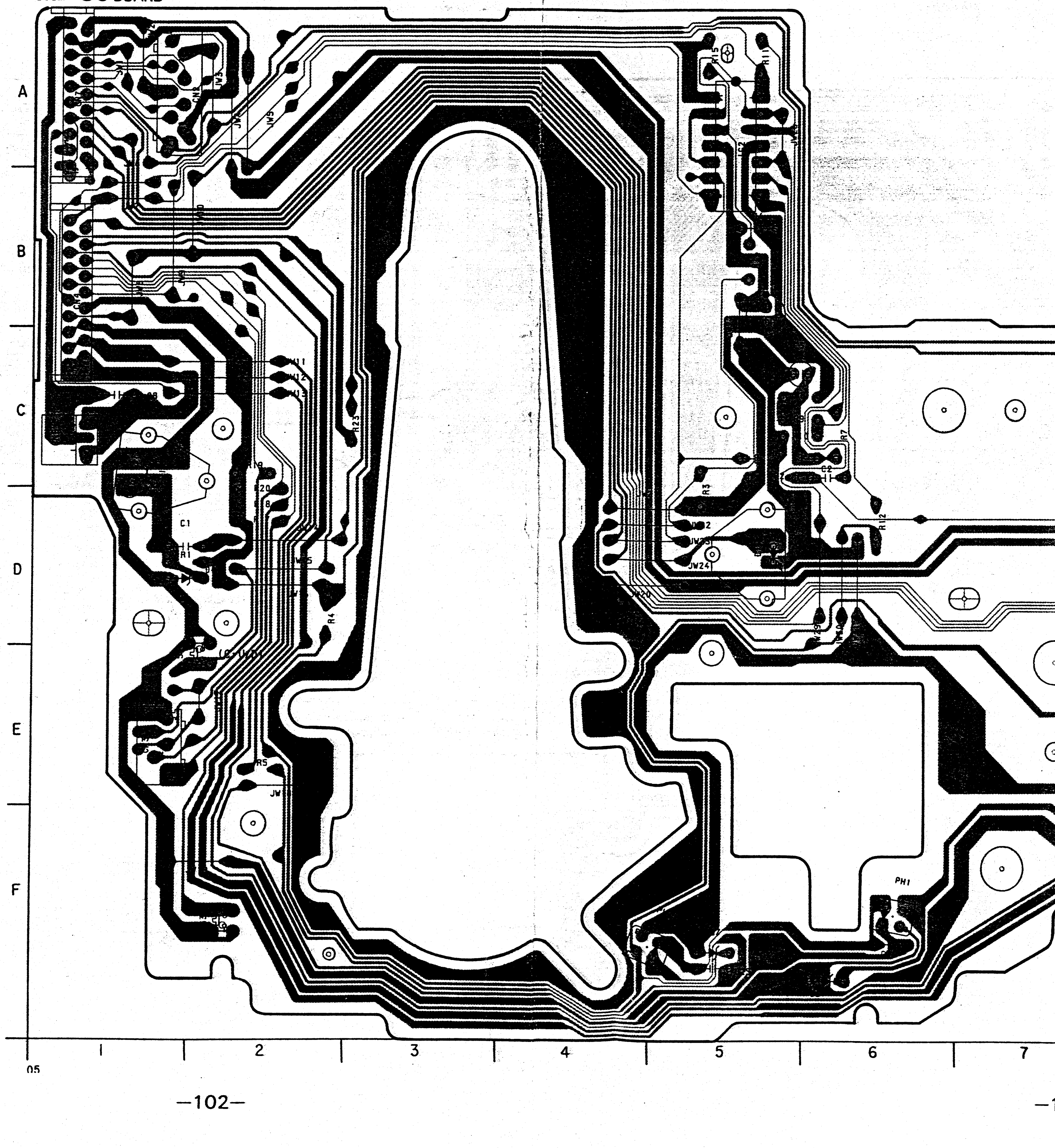


CA-41 BOARD



M
1-633-460-11
M903
CAM MOTOR

MD-56 BOARD

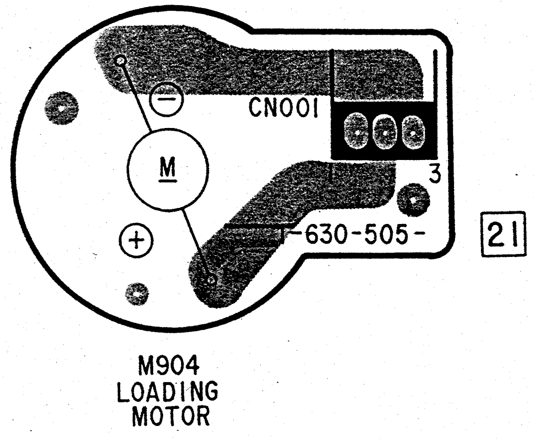


A
B
C
D
E
F
05
1
2
3
4
5
6
7
C1
R1
R3
R4
R5
R7
R12
R23
C2
PH1
JW9
JW11
JW12
JW13
JW22
JW23
JW24

MD-56 BOARD

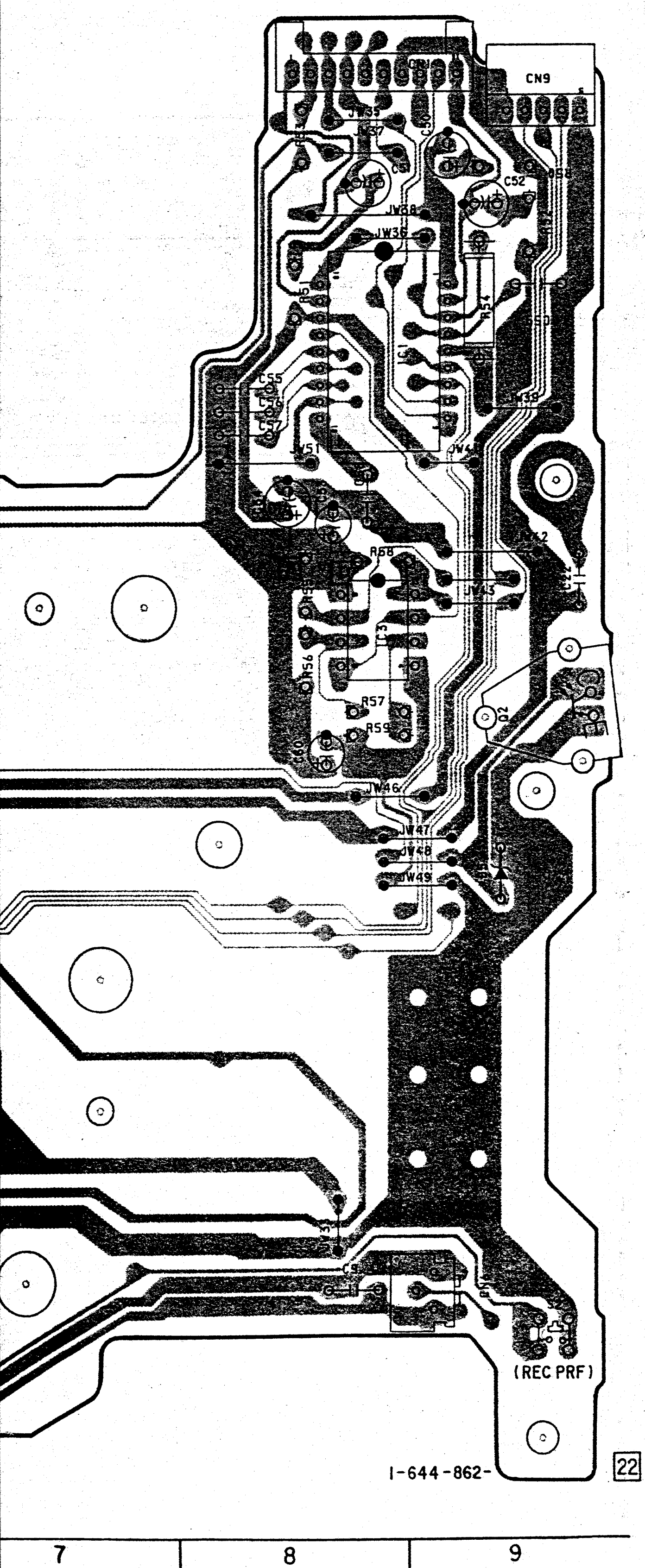
D1	D-5
D4	D-1
D5	D-9
D6	F-6
D7	F-5
IC2	A-5
PH1	F-4
PH2	F-6
Q1	C-1
Q2	C-9

CM-14 BOARD


CN001
M
3
630-505-
21
M904
LOADING
MOTOR

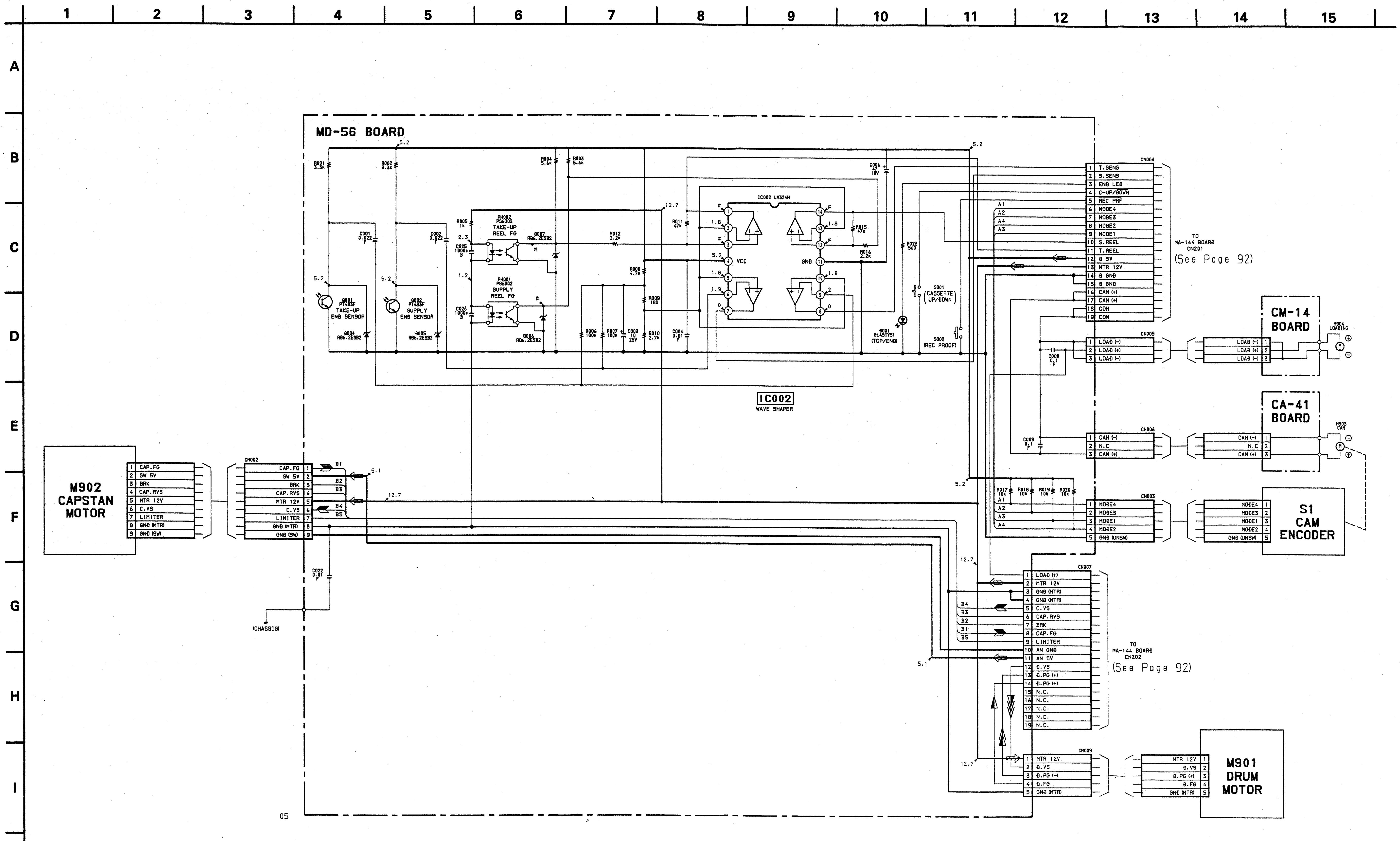
- **Signal path**

	REC	REC/PB	PB
Drum speed servo		>	
Drum phase servo		>>	
Drum servo (speed and phase)		>>>	
Capstan speed servo		▷	
Capstan phase servo	▶〉	▷〉	▷〉
Capstan servo (speed and phase)		▷〉〉	
Ref. signal	▶		▷


CN9
JW35
C52
JW38
JW36
C55
C56
C57
JW51
R58
R57
R59
R56
JW45
JW46
JW47
JW48
JW49
(REC PRF)
I-644-862-
22
7
8
9

MD-56 (MECHANISM DRIVE), CA-41 (CAM MOTOR), CM-14 (LOADING MOTOR) SCHEMATIC DIAGRAM

– Ref. No.: MD-56, CA-41 and CM-14 Boards; 3,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
MD-56 BOARD
5.2
R001 3.3k
R002 3.3k
C001 0.022 F
C002 0.022 F
5.2
Q001 PT483F TAKE-UP END SENSOR
Q002 PT483F SUPPLY END SENSOR
D004 RD6.2ESB2
D005 RD6.2ESB2
R005 1k
2.3
C025 1000p B
PH002 PS6002 TAKE-UP REEL FG
D007 RD6.2ESB2
#
1.2
C026 1000p B
PH001 PS6002 SUPPLY REEL FG
D006 RD6.2ESB2
R004 5.6k
R003 5.6k
R012 2.2k
12.7
R008 4.7k
R009 180
R006 100k
R007 100k
C003 10 25V
R010 2.7k
C004 0.01 Y
R011 47k
IC002 LM324N
VCC
GND
1.8
1.9
0
2
R015 47k
R016 2.2k
C006 47 10V
R023 560
D001 GL451VS1 (TOP/END)
S001 (CASSETTE UP/DOWN)
S002 (REC PROOF)
IC002
WAVE SHAPER
CN004
1 T.SENS
2 S.SENS
3 END LED
4 C-UP/DOWN
5 REC PRF
6 MODE4
7 MODE3
8 MODE2
9 MODE1
10 S.REEL
11 T.REEL
12 D 5V
13 MTR 12V
14 D GND
15 D GND
16 CAM (+)
17 CAM (+)
18 COM
19 COM
A1
A2
A4
A3
TO MA-144 BOARD CN201
(See Page 92)
CN005
1 LOAD (–)
2 LOAD (+)
3 LOAD (–)
C008 0.1 F
CM-14 BOARD
M904 LOADING
CN006
1 CAM (–)
2 N.C
3 CAM (+)
C009 0.1 F
CA-41 BOARD
M903 CAM
5.2
R017 10k
R018 10k
R019 10k
R020 10k
CN003
1 MODE4
2 MODE3
3 MODE1
4 MODE2
5 GND (UNSW)
S1 CAM ENCODER
M902 CAPSTAN MOTOR
1 CAP.FG
2 SW 5V
3 BRK
4 CAP.RVS
5 MTR 12V
6 C.VS
7 LIMITER
8 GND (MTR)
9 GND (SW)
CN002
B1
B2
B3
B4
B5
5.1
12.7
C022 0.01 F
(CHASSIS)
CN007
1 LOAD (+)
2 MTR 12V
3 GND (MTR)
4 GND (MTR)
5 C.VS
6 CAP.RVS
7 BRK
8 CAP.FG
9 LIMITER
10 AN GND
11 AN 5V
12 D.VS
13 D.PG (+)
14 D.PG (+)
15 N.C.
16 N.C.
17 N.C.
18 N.C.
19 N.C.
TO MA-144 BOARD CN202
(See Page 92)
CN009
1 MTR 12V
2 D.VS
3 D.PG (+)
4 D.FG
5 GND (MTR)
M901 DRUM MOTOR
05

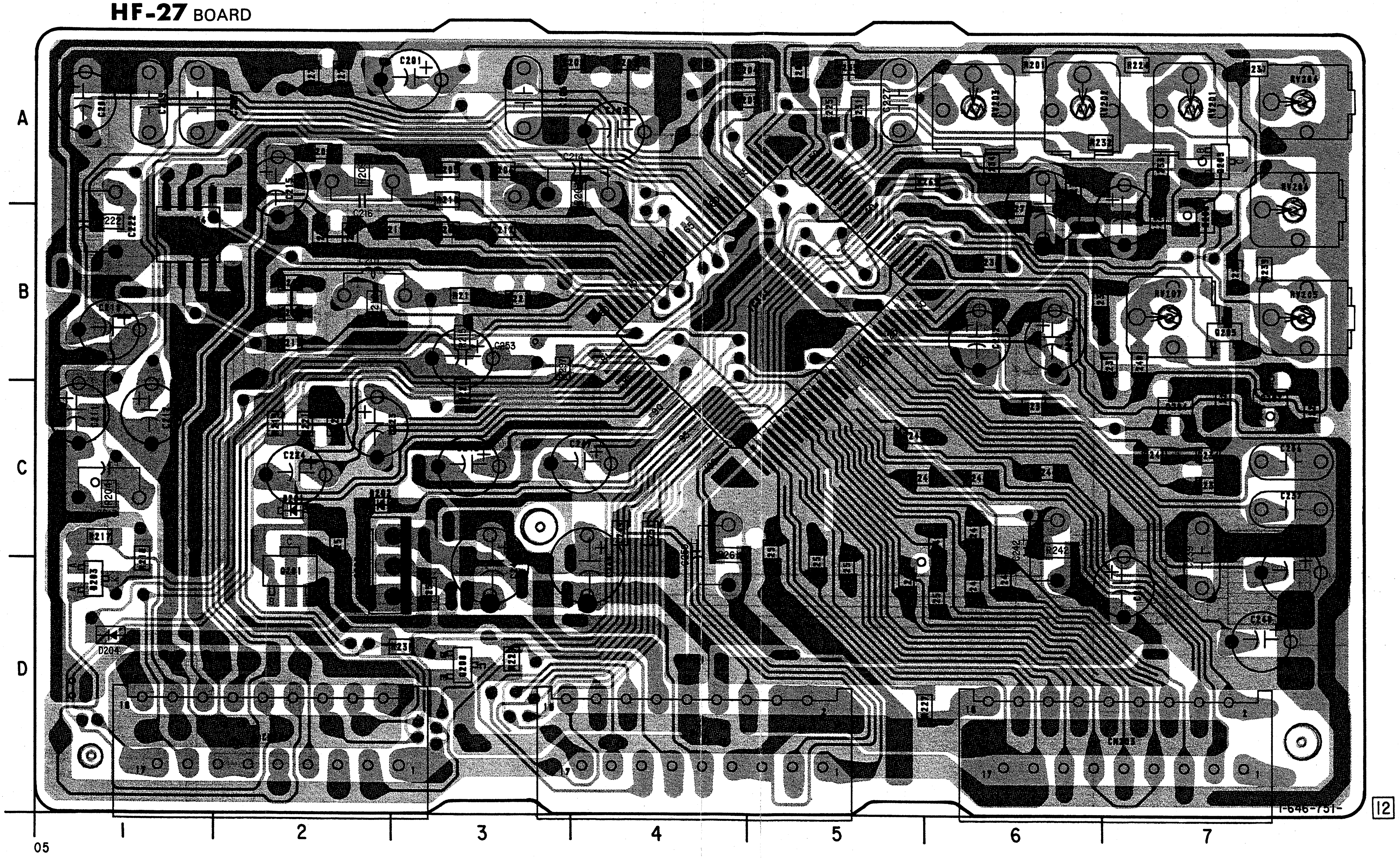
J

No mark : COMMON (REC)
* : PB
# : Impossible to measure the voltage at the marked points.

27 (HiFi AUDIO) PRINTED WIRING BOARD

f. No.: HF-27 Board; 4,000 series –

HF-27 BOARD



< DIODE >

D201	8-719-404-46	MA110
D202	8-719-404-46	MA110
D203	8-719-400-18	MA152WK

< IC >

IC201	8-759-160-54	XLH7772KS-VP
IC204	8-759-089-84	BA7755AF-T1

< TRANSISTOR >

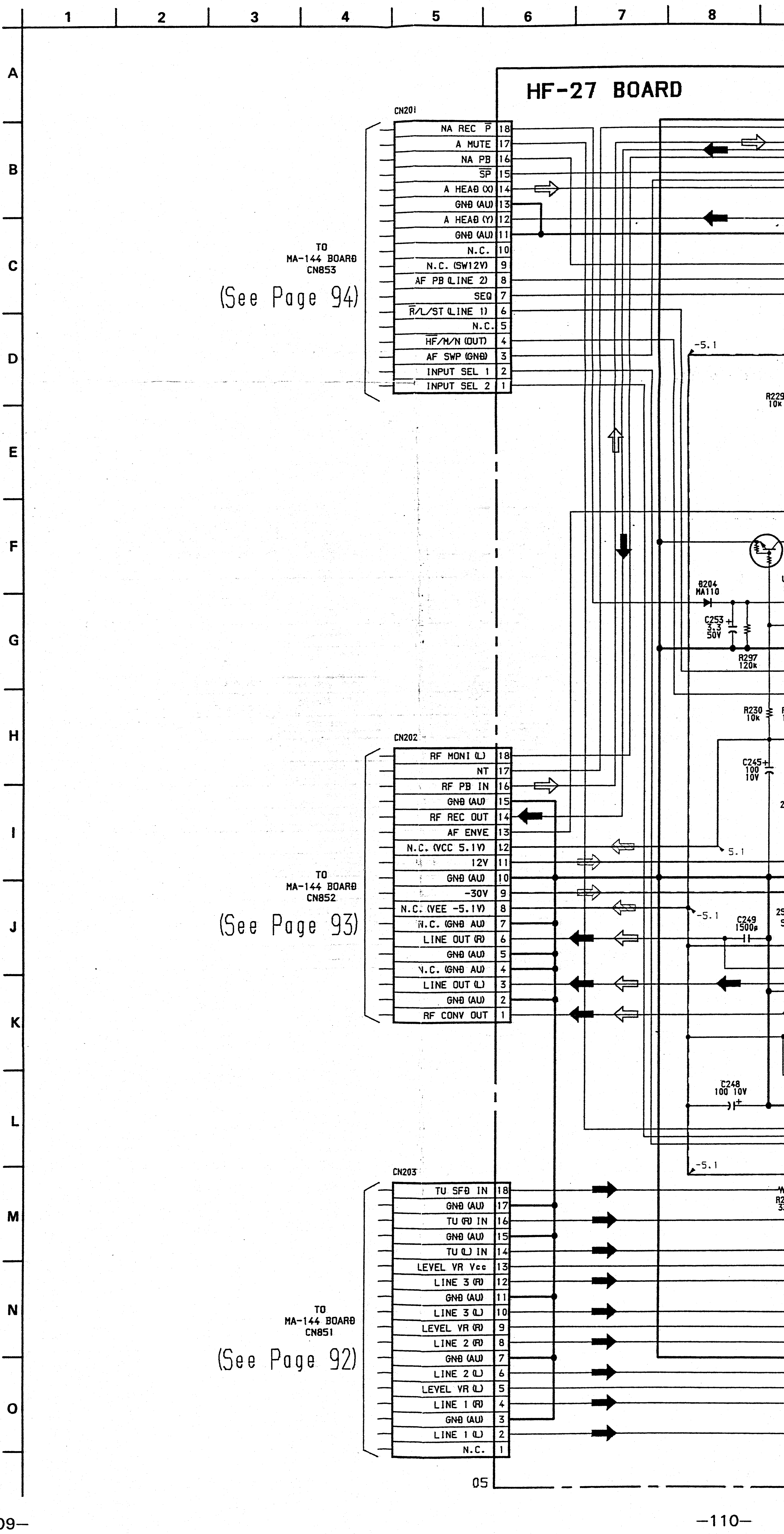
Q201	8-729-808-01	2SD1622-S
Q208	8-729-421-19	UN2213

HF-27 BOARD

D201	C-2
D202	C-2
D203	D-1
IC201	B-4
IC204	B-1
Q201	C-2
Q202	D-2
Q203	A-7
Q205	B-7
Q206	B-7
Q208	D-3

HF-27 (HiFi AUDIO) SCHEMATIC DIAGRAM

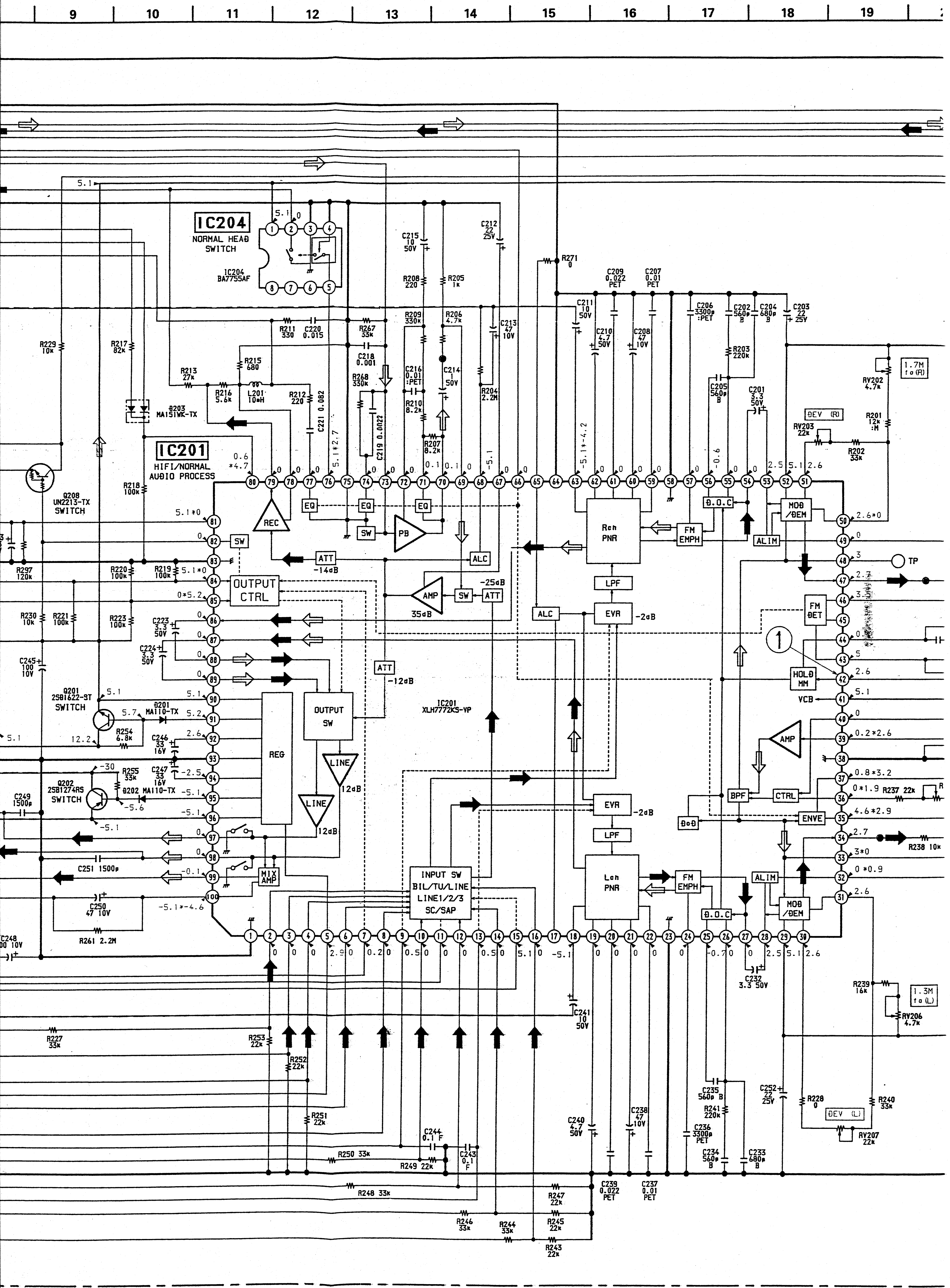
– Ref. No.: HF-27 Board; 4,000 series –


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
HF-27 BOARD
CN201
NA REC P 18
A MUTE 17
NA PB 16
SP 15
A HEAD (X) 14
GND (AU) 13
A HEAD (Y) 12
GND (AU) 11
N.C. 10
N.C. (SW12V) 9
AF PB (LINE 2) 8
SEQ 7
R/L/ST (LINE 1) 6
N.C. 5
HF/H/N (OUT) 4
AF SWP (GND) 3
INPUT SEL 1 2
INPUT SEL 2 1
TO
MA-144 BOARD
CN853
(See Page 94)
CN202
RF MONI (L) 18
NT 17
RF PB IN 16
GND (AU) 15
RF REC OUT 14
AF ENVE 13
N.C. (VCC 5.1V) 12
12V 11
GND (AU) 10
-30V 9
N.C. (VEE -5.1V) 8
N.C. (GND AU) 7
LINE OUT (R) 6
GND (AU) 5
N.C. (GND AU) 4
LINE OUT (L) 3
GND (AU) 2
RF CONV OUT 1
TO
MA-144 BOARD
CN852
(See Page 93)
CN203
TU SFD IN 18
GND (AU) 17
TU (R) IN 16
GND (AU) 15
TU (L) IN 14
LEVEL VR Vcc 13
LINE 3 (R) 12
GND (AU) 11
LINE 3 (L) 10
LEVEL VR (R) 9
LINE 2 (R) 8
GND (AU) 7
LINE 2 (L) 6
LEVEL VR (L) 5
LINE 1 (R) 4
GND (AU) 3
LINE 1 (L) 2
N.C. 1
TO
MA-144 BOARD
CN851
(See Page 92)
-5.1
R229
10k
D204
MA110
C253
3.3
50V
R297
120k
R230
10k
C245
100
10V
5.1
-5.1
C249
1500p
C248
100 10V
-5.1
05

No mark : COMMON (REC)
* : PB
= : Impossible to measure the voltage at the marked points.

- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

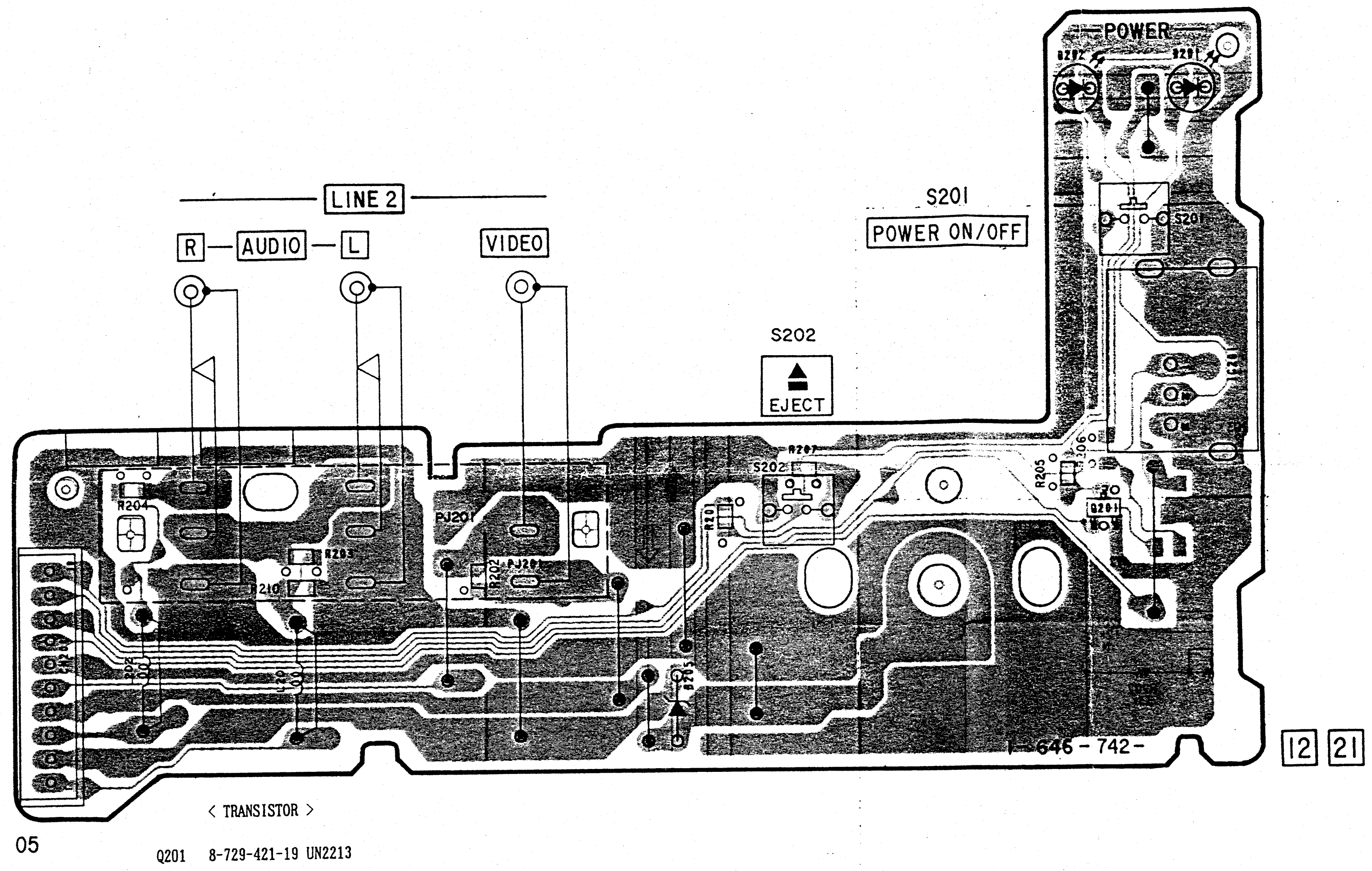


9
10
11
12
13
14
15
16
17
18
19
IC204
NORMAL HEAD SWITCH
IC204 BA7755AF
IC201
HIFI/NORMAL AUDIO PROCESS
IC201 XLH7772KS-VP
REC
PB
EQ
SW
ATT
ALC
AMP
OUTPUT CTRL
OUTPUT SW
REG
LINE
MIX AMP
INPUT SW BIL/TU/LINE LINE1/2/3 SC/SAP
Rch PNR
Lch PNR
LPF
EVR
FM EMPH
FM DET
D.O.C
ALIM
MOD /DEM
HOLD MM
BPF
CTRL
ENVE
DoD
TP
VCB
-14dB
-25dB
35dB
-12dB
-2dB
12dB
Q208 UN2213-TX SWITCH
Q201 2SB1622-ST SWITCH
Q202 2SB1274RS SWITCH
D203 MA151WK-TX
D201 MA110-TX
D202 MA110-TX
L201 10mH
RV202 4.7k
RV203 22k
RV206 4.7k
RV207 22k
1.7M to (R)
1.3M to (L)
DEV (R)
DEV (L)
①

-171 (POWER/EJECT SWITCHES), MF-172 (MODE CONTROL), MF-173 (CONTROL SWITCHES) PRINTED WIRING BOARDS

Ref. No.: MF-171, MF-172 and MF-173 Boards; 5,000 series –

MF-171 BOARD


POWER
D202
D201
LINE 2
R
AUDIO
L
VIDEO
S201
POWER ON/OFF
S202
EJECT
R204
R203
PJ201
PJ202
R207
S202
R205
R206
Q201
R201
D205
1-646-742-
12
21
05

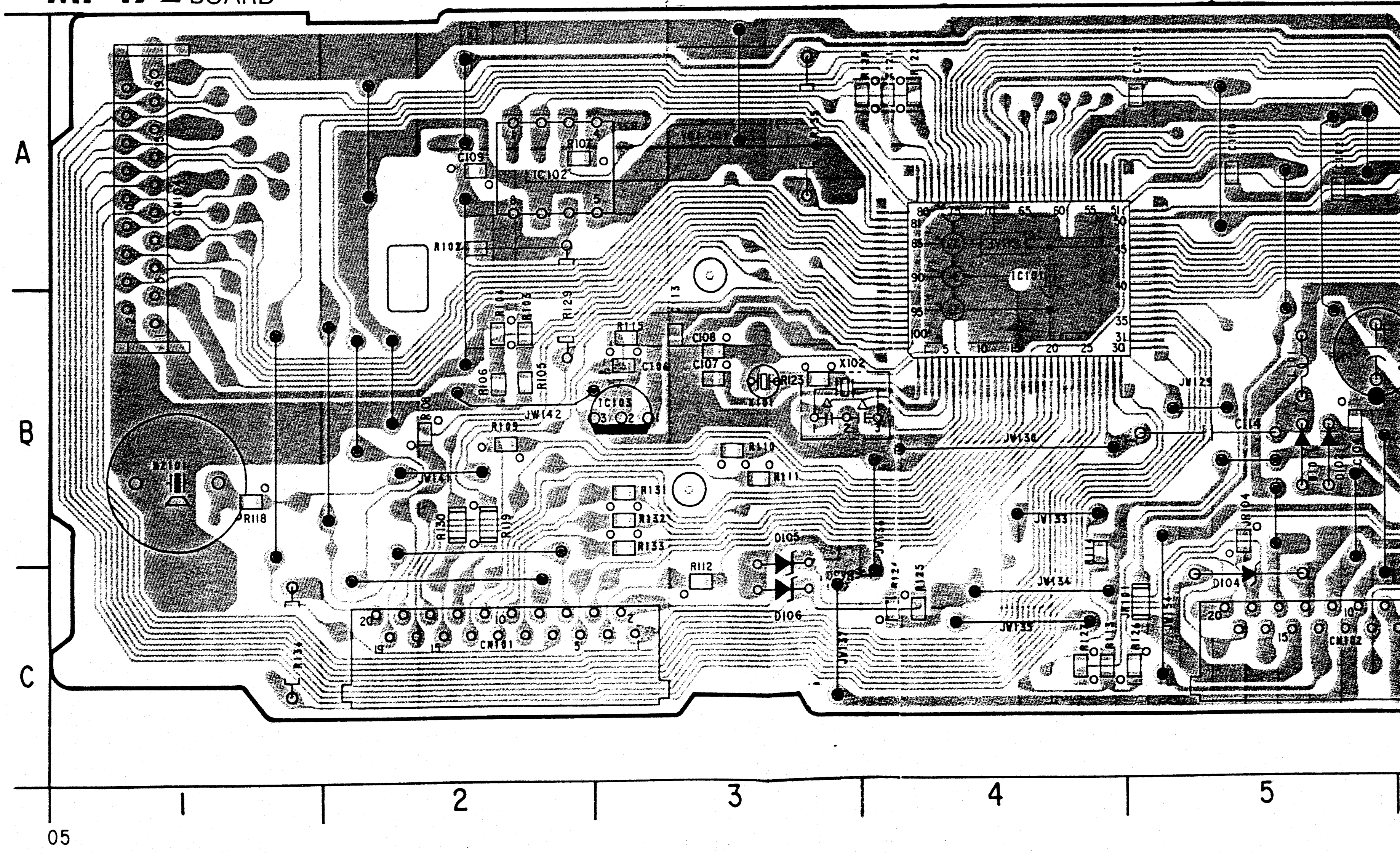
< TRANSISTOR >

Q201 8-729-421-19 UN2213

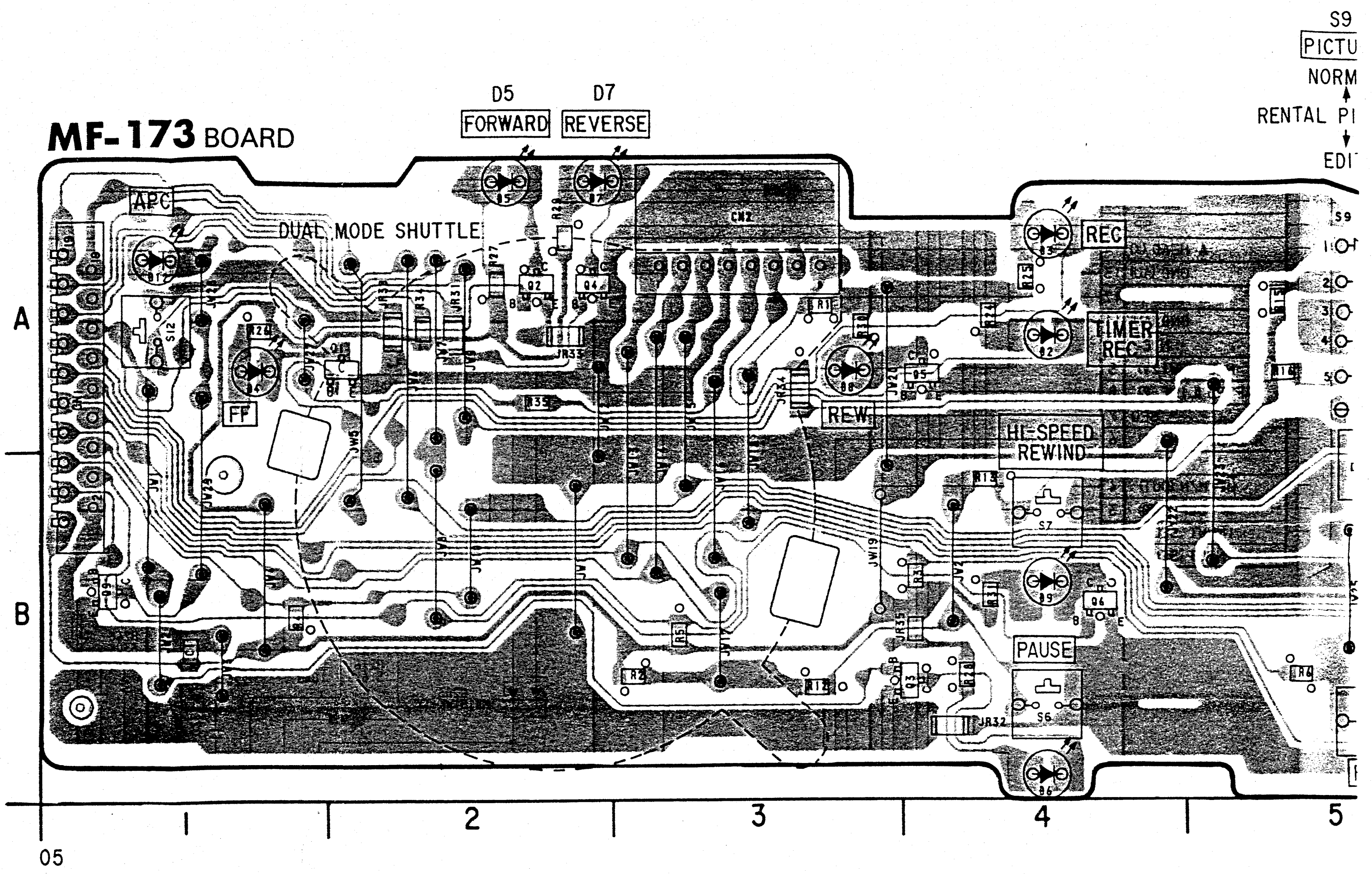
MF-172 BOARD

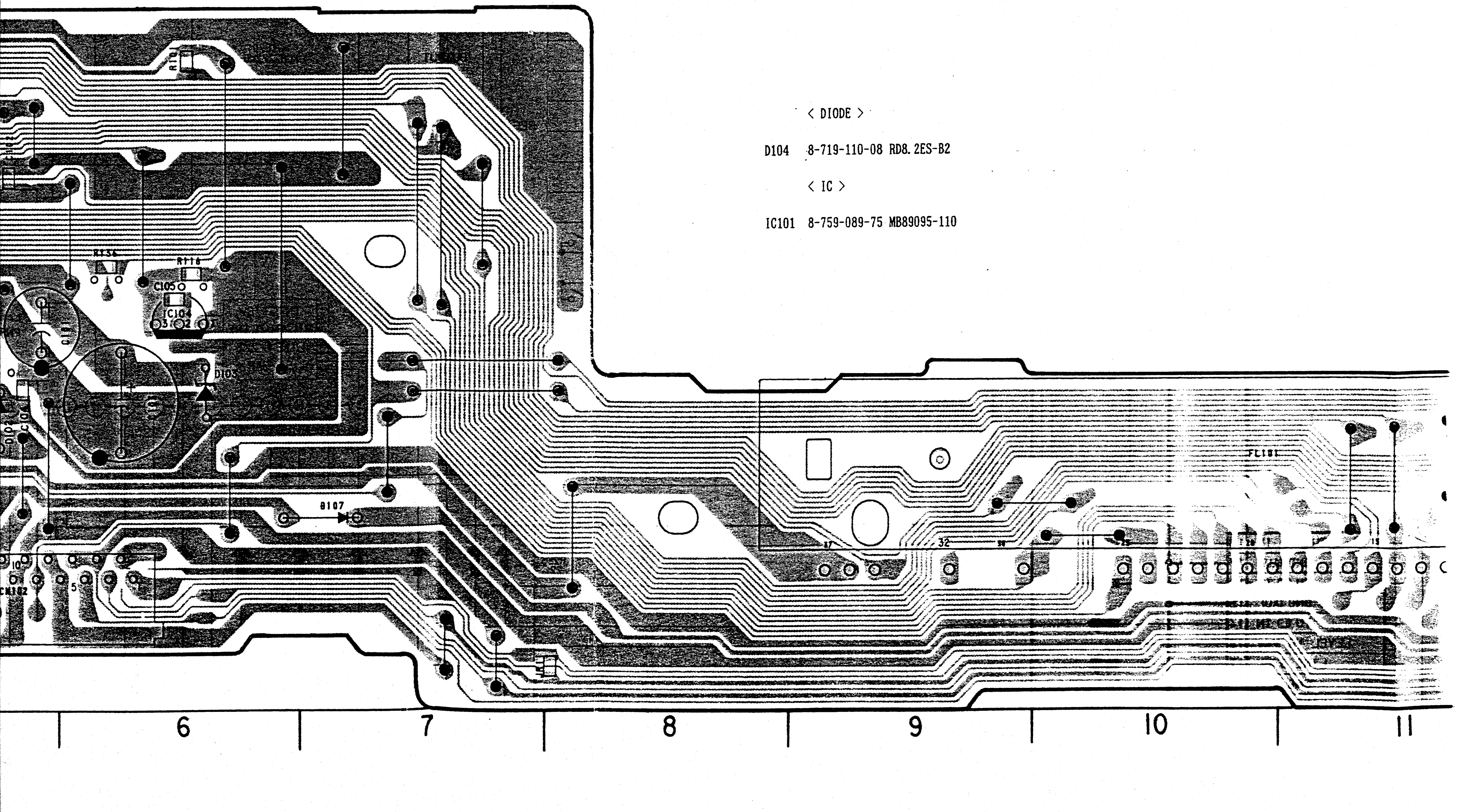
D101	B-5
D102	B-5
D104	C-5
D107	C-7
IC101	A-4
IC102	A-2
IC103	B-6
IC104	B-6

MF-172 BOARD


A
B
C
1
2
3
4
5
05
IC101
IC102
IC103
C109
R107
R102
R129
R106
R105
R109
JW142
JW141
BZ101
R118
R130
R119
R131
R132
R133
R110
R111
R112
D105
D106
D104
C108
C107
X102
R125
R134
R136
CN101
CN102
JW133
JW134
JW135
JW136
JW125
C114
20
19
15
10
5
80
75
70
65
60
55
51
85
90
95
100
35
30
25
31

MF-173 BOARD


D5
FORWARD
D7
REVERSE
S9
PICTU
NORM
RENTAL PI
EDI
APC
DUAL MODE SHUTTLE
FF
REW
REC
TIMER REC
HI-SPEED REWIND
PAUSE
A
B
1
2
3
4
5
05


R156
R116
C105
IC104
D103
D107
CN302
FL101
6
7
8
9
10
11

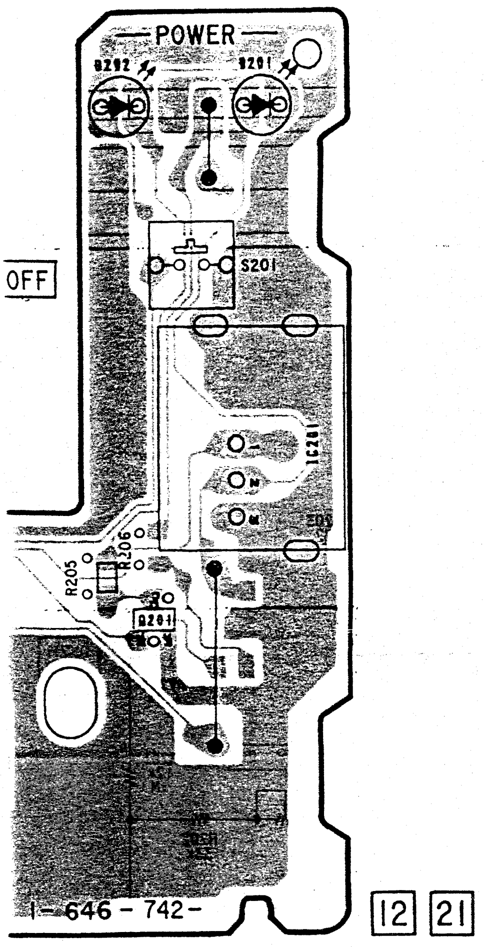
< DIODE >

D104 8-719-110-08 RD8.2ES-B2

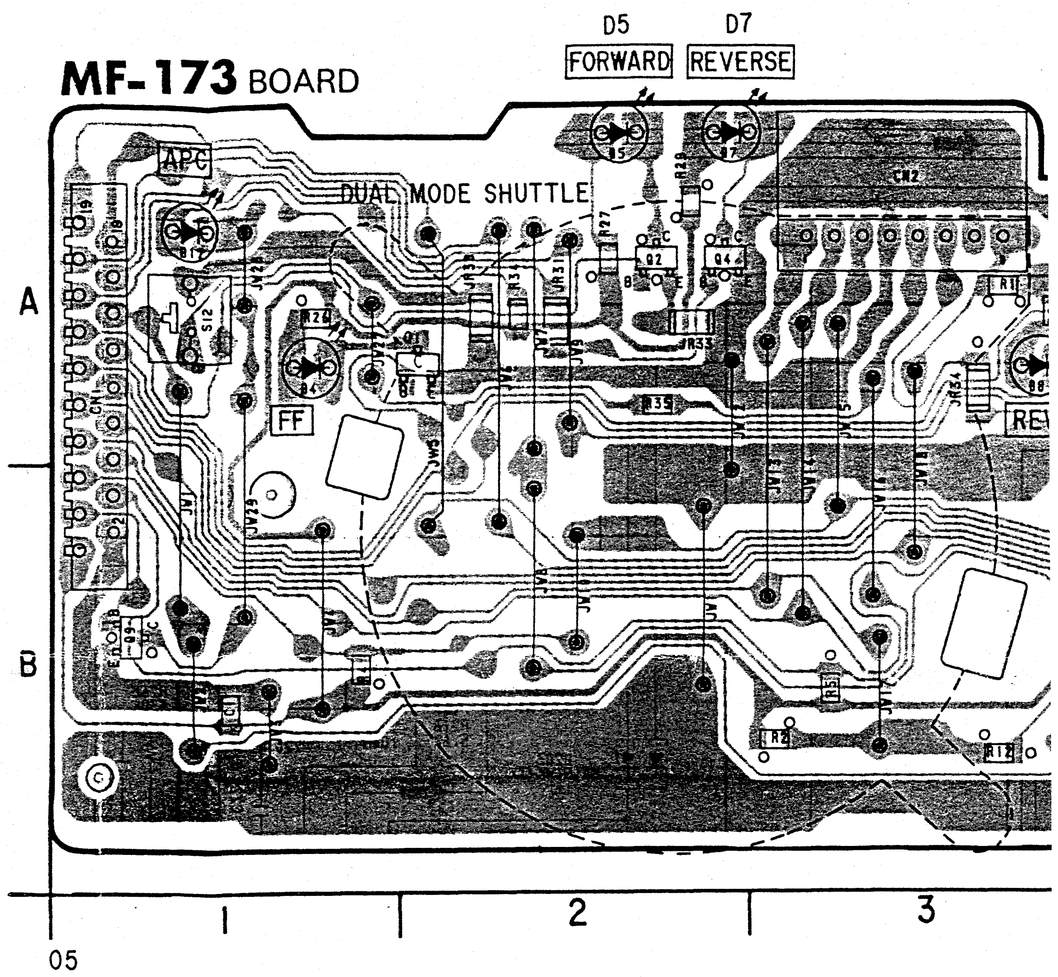
< IC >

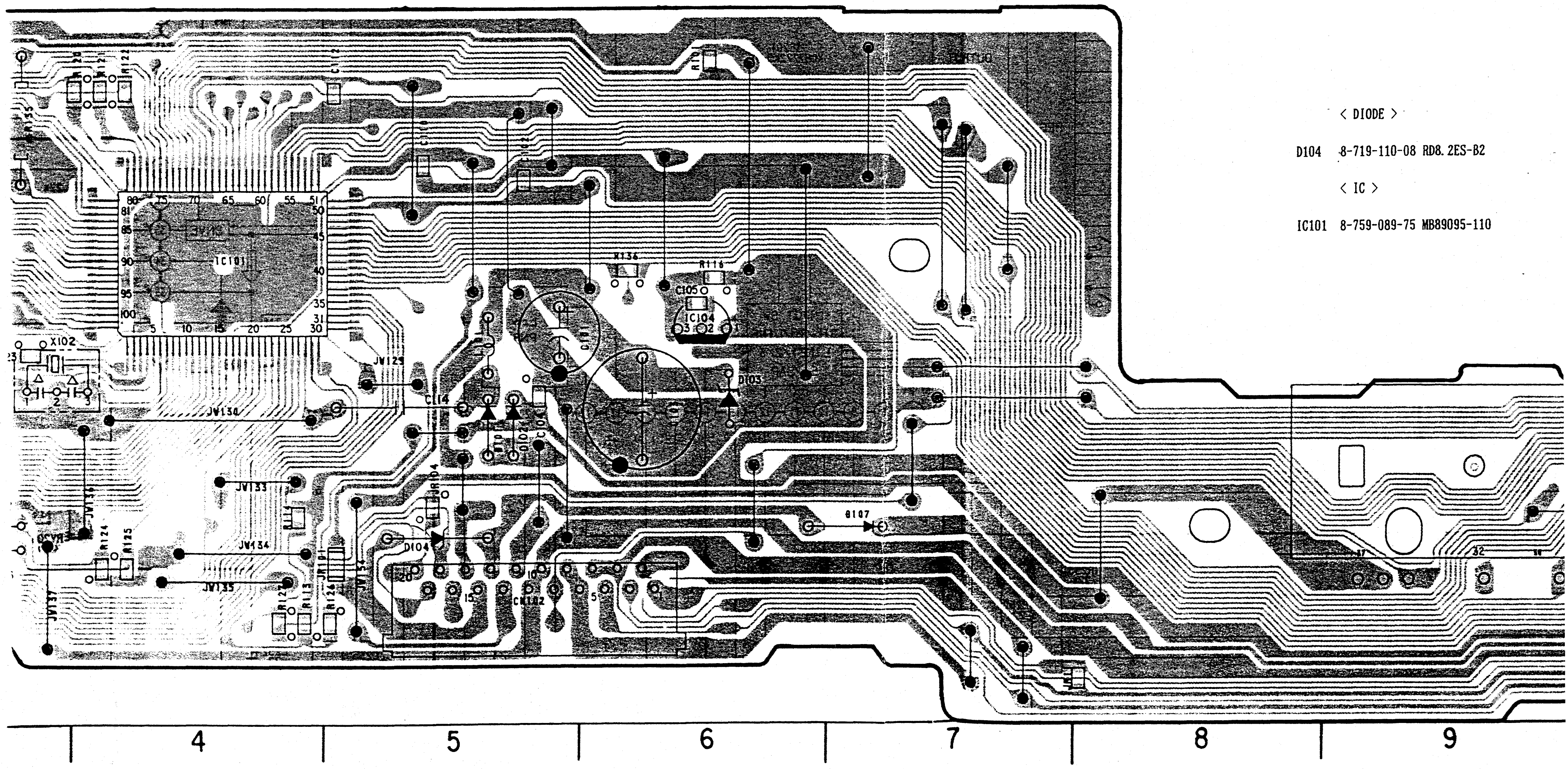
IC101 8-759-089-75 MB89095-110

MF-171 BOARD


POWER
D202
D201
S201
IC201
R205
R206
Q201
OFF
1-646-742-
12
21

MF-173 BOARD


D5
FORWARD
D7
REVERSE
APC
DUAL MODE SHUTTLE
FF
RE
CN2
Q2
Q4
S12
A
B
1
2
3
05

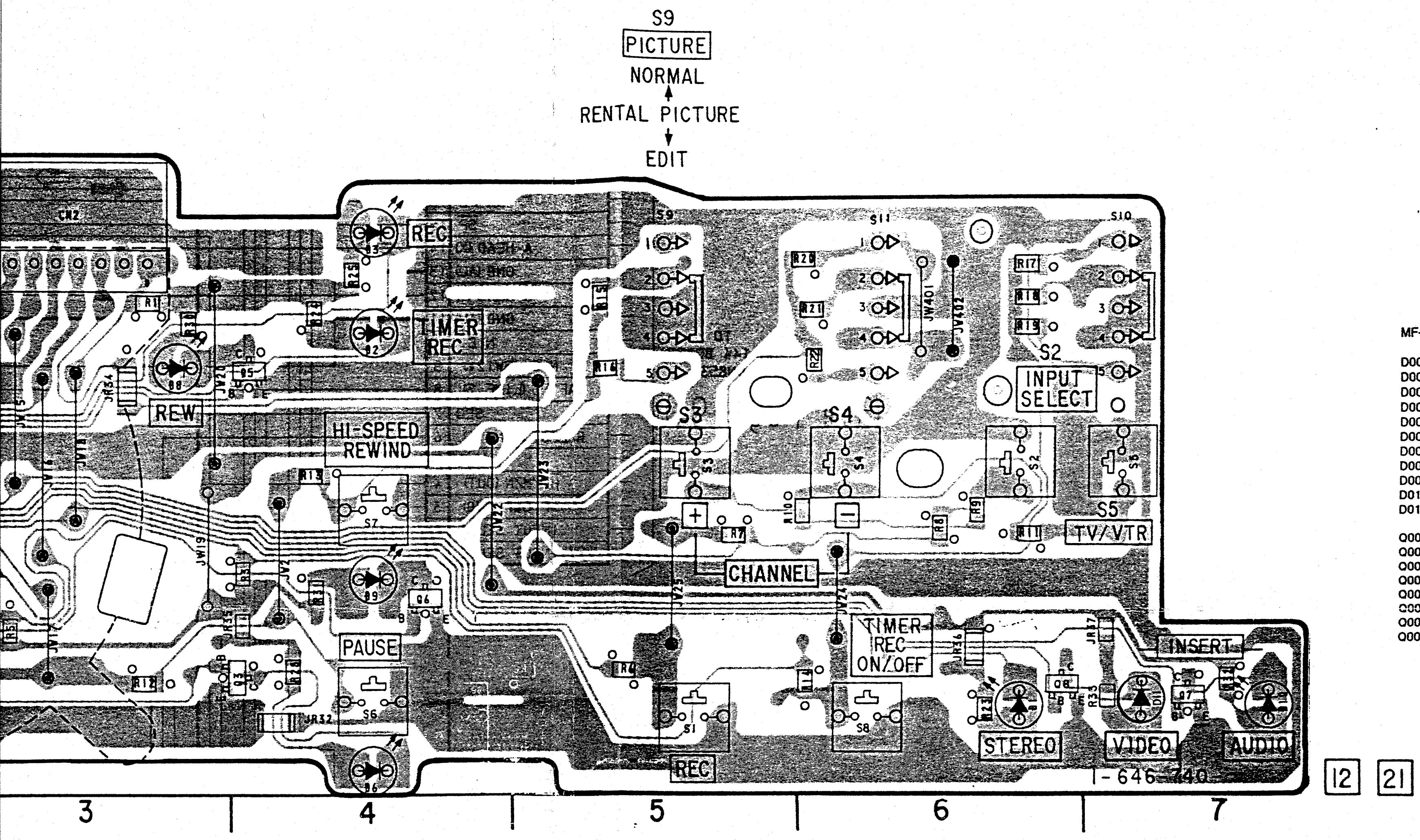

IC101
X102
JW130
JW133
JW134
JW135
JW137
C114
C105
IC104
R116
R136
D103
D104
D107
CN102
4
5
6
7
8
9

< DIODE >

D104 8-719-110-08 RD8.2ES-B2

< IC >

IC101 8-759-089-75 MB89095-110


S9
PICTURE
NORMAL
RENTAL PICTURE
EDIT
REC
TIMER REC
REW
HI-SPEED REWIND
PAUSE
REC
CHANNEL
TIMER REC ON/OFF
S3
S4
S2
INPUT SELECT
S5
TV/VTR
INSERT
STEREO
VIDEO
AUDIO
1-646-740
12
21
3
4
5
6
7

MF-173 BOARD

D001	B-6
D002	A-4
D003	A-4
D004	A-1
D005	A-2
D006	B-4
D007	A-2
D008	A-3
D009	B-4
D010	B-7
D012	A-1
Q001	A-2
Q002	A-2
Q004	B-4
Q003	A-2
Q005	A-4
Q006	B-4
Q007	B-7
Q009	B-1

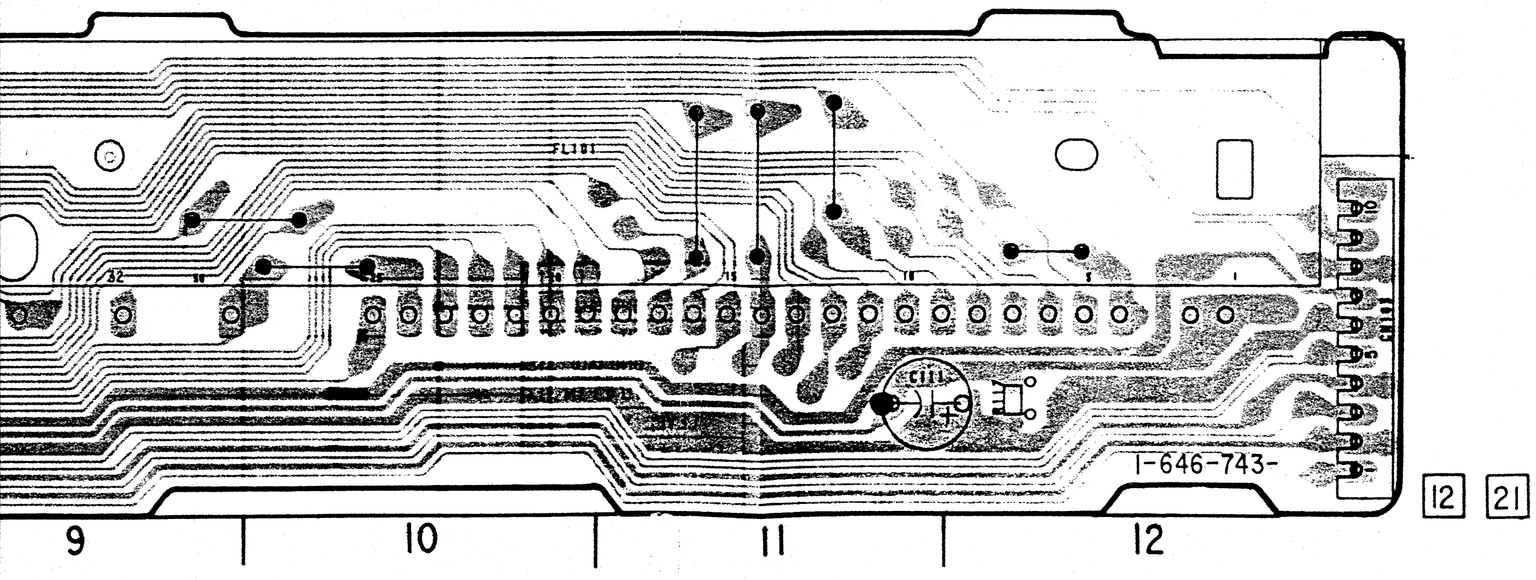
< TRANSISTOR >

Q001	8-729-421-19	UN2213
Q002	8-729-421-19	UN2213
Q003	8-729-421-19	UN2213
Q004	8-729-421-19	UN2213
Q005	8-729-421-19	UN2213
Q006	8-729-421-19	UN2213
Q007	8-729-421-19	UN2213
Q008	8-729-421-19	UN2213
Q009	8-729-421-19	UN2213

>

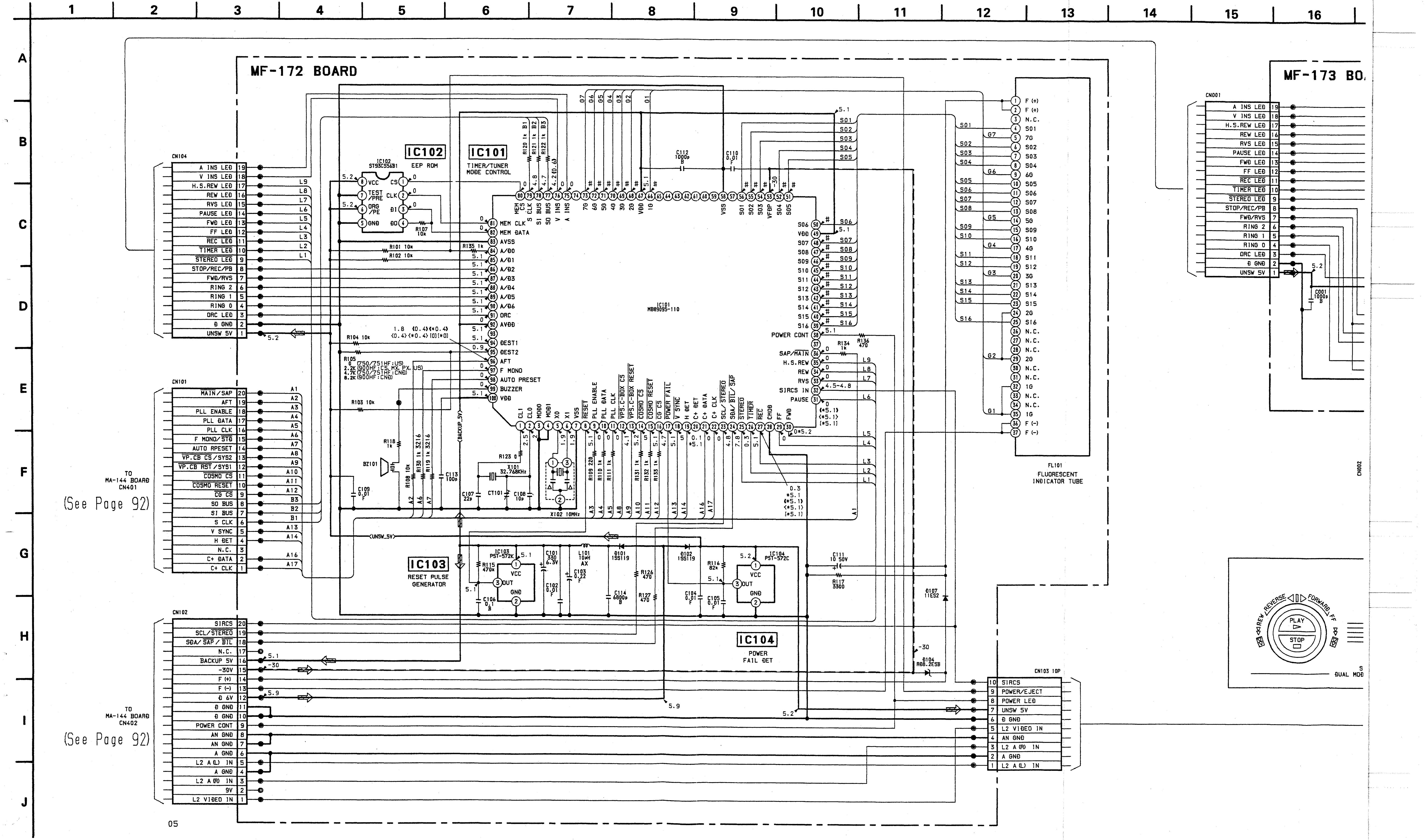
-08 RD8.2ES-B2

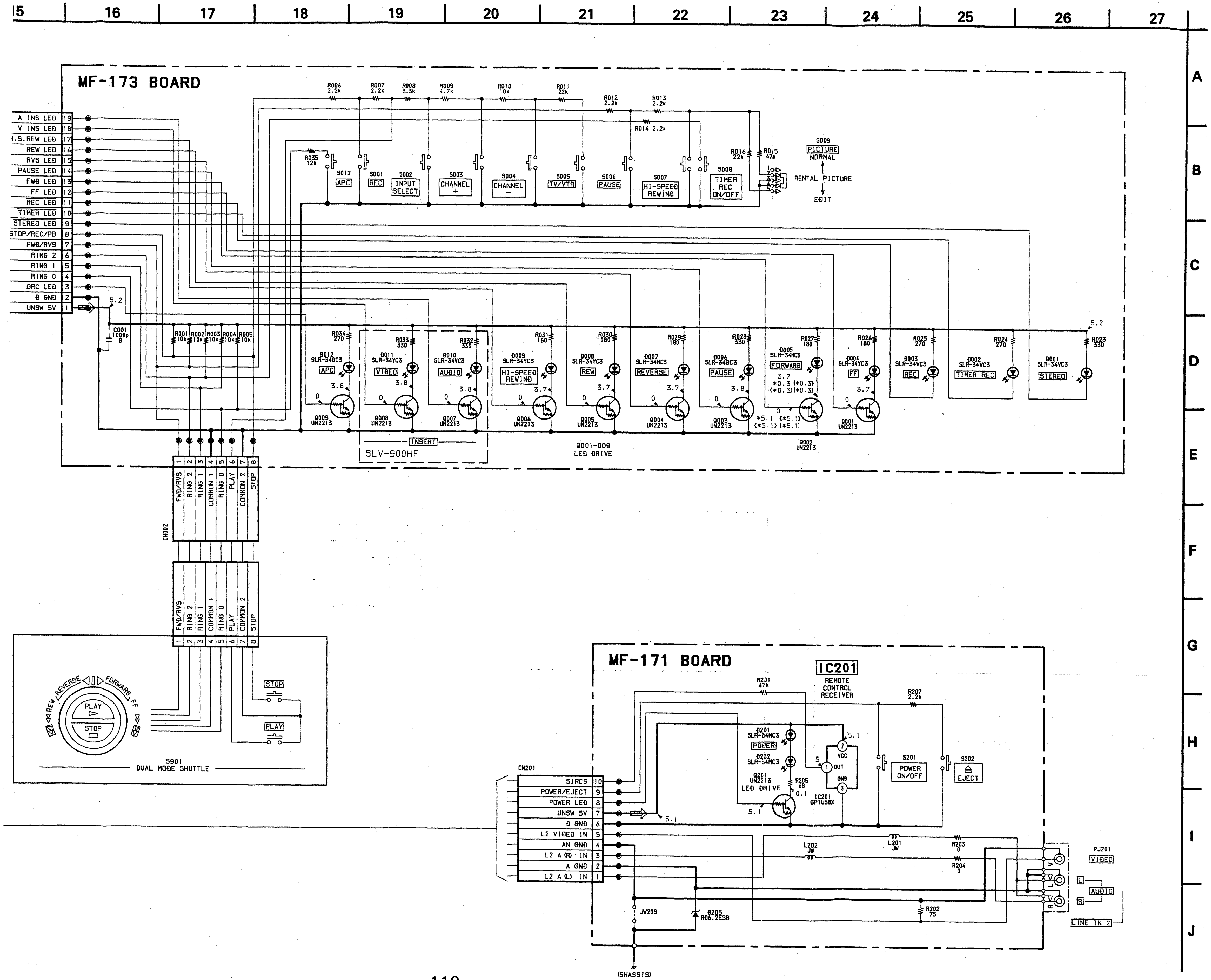
-75 MB89095-110


FL101
1-646-743-
12
21
9
10
11
12

MF-171 (POWER/EJECT SWITCHES), MF-172 (MODE CONTROL), MF-173 (CONTROL SWITCHES) SCHEMATIC DIAGRAM

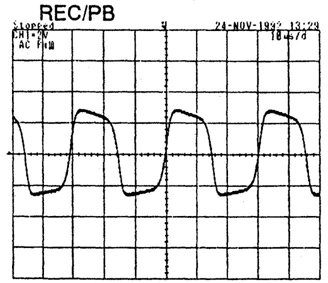
– Ref. No.: MF-171, MF-172 and MF-173 Boards; 5,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
MF-172 BOARD
MF-173 BO
IC101
TIMER/TUNER MODE CONTROL
IC101 MB89095-110
IC102
EEP ROM
IC102 S93CS56B1
IC103
RESET PULSE GENERATOR
IC103 PST-572K
IC104
POWER FAIL DET
IC104 PST-572C
CN104
CN101
CN102
CN103 10P
CN001
A INS LED
V INS LED
H.S.REW LED
REW LED
RVS LED
PAUSE LED
FWD LED
FF LED
REC LED
TIMER LED
STEREO LED
STOP/REC/PB
FWD/RVS
RING 2
RING 1
RING 0
ORC LED
D GND
UNSW 5V
MAIN/SAP
AFT
PLL ENABLE
PLL DATA
PLL CLK
F MONO/STD
AUTO RPESET
VP.CB CS/SYS2
VP.CB RST/SYS1
COSMO CS
COSMO RESET
CG CS
SO BUS
SI BUS
S CLK
V SYNC
H DET
N.C.
C+ DATA
C+ CLK
SIRCS
SCL/STEREO
SDA/SAP/BIL
BACKUP 5V
-30V
F (+)
F (–)
D 6V
POWER CONT
AN GND
A GND
L2 A (L) IN
L2 A (R) IN
9V
L2 VIDEO IN
POWER/EJECT
POWER LED
TO MA-144 BOARD CN401
(See Page 92)
TO MA-144 BOARD CN402
(See Page 92)
FL101
FLUORESCENT INDICATOR TUBE
X101 32.768KHz
X102 10MHz
BZ101
D101 1SS119
D102 1SS119
D104 RD8.2ESB
D107 11ES2
L101 10μH
MEM CLK
MEM DATA
AVSS
A/D0
A/D1
A/D2
A/D3
A/D4
A/D5
A/D6
ORC
AVDD
DEST1
DEST2
AFT
F MONO
AUTO PRESET
BUZZER
VDD
POWER CONT
SAP/MAIN
H.S.REW
REW
RVS
SIRCS IN
PAUSE
<UNSW_5V>
<BACKUP_5V>
PLAY
STOP
REW
REVERSE
FORWARD
FF
DUAL MOD
05

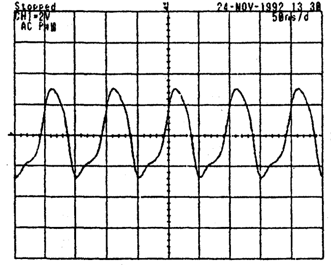

15
16
17
18
19
20
21
22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
MF-173 BOARD
A INS LED 19
V INS LED 18
H.S.REW LED 17
REW LED 16
RVS LED 15
PAUSE LED 14
FWD LED 13
FF LED 12
REC LED 11
TIMER LED 10
STEREO LED 9
STOP/REC/PB 8
FWD/RVS 7
RING 2 6
RING 1 5
RING 0 4
DRC LED 3
D GND 2
UNSW 5V 1
S012 APC
S001 REC
S002 INPUT SELECT
S003 CHANNEL +
S004 CHANNEL −
S005 TV/VTR
S006 PAUSE
S007 HI-SPEED REWIND
S008 TIMER REC ON/OFF
S009 PICTURE NORMAL
RENTAL PICTURE
EDIT
R006 2.2k
R007 2.2k
R008 3.3k
R009 4.7k
R010 10k
R011 22k
R012 2.2k
R013 2.2k
R014 2.2k
R015 47k
R016 22k
R035 12k
C001 1000p B
R001 10k
R002 10k
R003 10k
R004 10k
R005 10k
D012 SLR-34DC3 APC
D011 SLR-34YC3 VIDEO
D010 SLR-34VC3 AUDIO
D009 SLR-34YC3 HI-SPEED REWIND
D008 SLR-34YC3 REW
D007 SLR-34MC3 REVERSE
D006 SLR-34DC3 PAUSE
D005 SLR-34MC3 FORWARD
D004 SLR-34YC3 FF
D003 SLR-34VC3 REC
D002 SLR-34VC3 TIMER REC
D001 SLR-34VC3 STEREO
Q009 UN2213
Q008 UN2213
Q007 UN2213
Q006 UN2213
Q005 UN2213
Q004 UN2213
Q003 UN2213
Q002 UN2213
Q001 UN2213
Q001-009 LED DRIVE
INSERT
SLV-900HF
5.2
CN002
FWD/RVS
RING 2
RING 1
COMMON 1
RING 0
PLAY
COMMON 2
STOP
S901 DUAL MODE SHUTTLE
REVERSE
FORWARD
REW
FF
PLAY
STOP
MF-171 BOARD
IC201 REMOTE CONTROL RECEIVER
IC201 GP1U58X
D201 SLR-34MC3 POWER
D202 SLR-34MC3
Q201 UN2213 LED DRIVE
R231 47k
R207 2.2k
R205 68
S201 POWER ON/OFF
S202 EJECT
CN201
SIRCS 10
POWER/EJECT 9
POWER LED 8
UNSW 5V 7
D GND 6
L2 VIDEO IN 5
AN GND 4
L2 A (R) IN 3
A GND 2
L2 A (L) IN 1
L202 JW
L201 JW
R203 0
R204 0
R202 75
JW209
D205 RD6.2ESB
PJ201 VIDEO
AUDIO
LINE IN 2
(CHASSIS)

MF-172 BOARD

❶ IC101 ① 2 V/DIV 10 µs/DIV REC/PB



❷ IC101 ⑥ 2 V/DIV 50 ns/DIV REC/PB



No mark : COMMON (REC)
* : PB
# : Impossible to measure the voltage at the marked points.

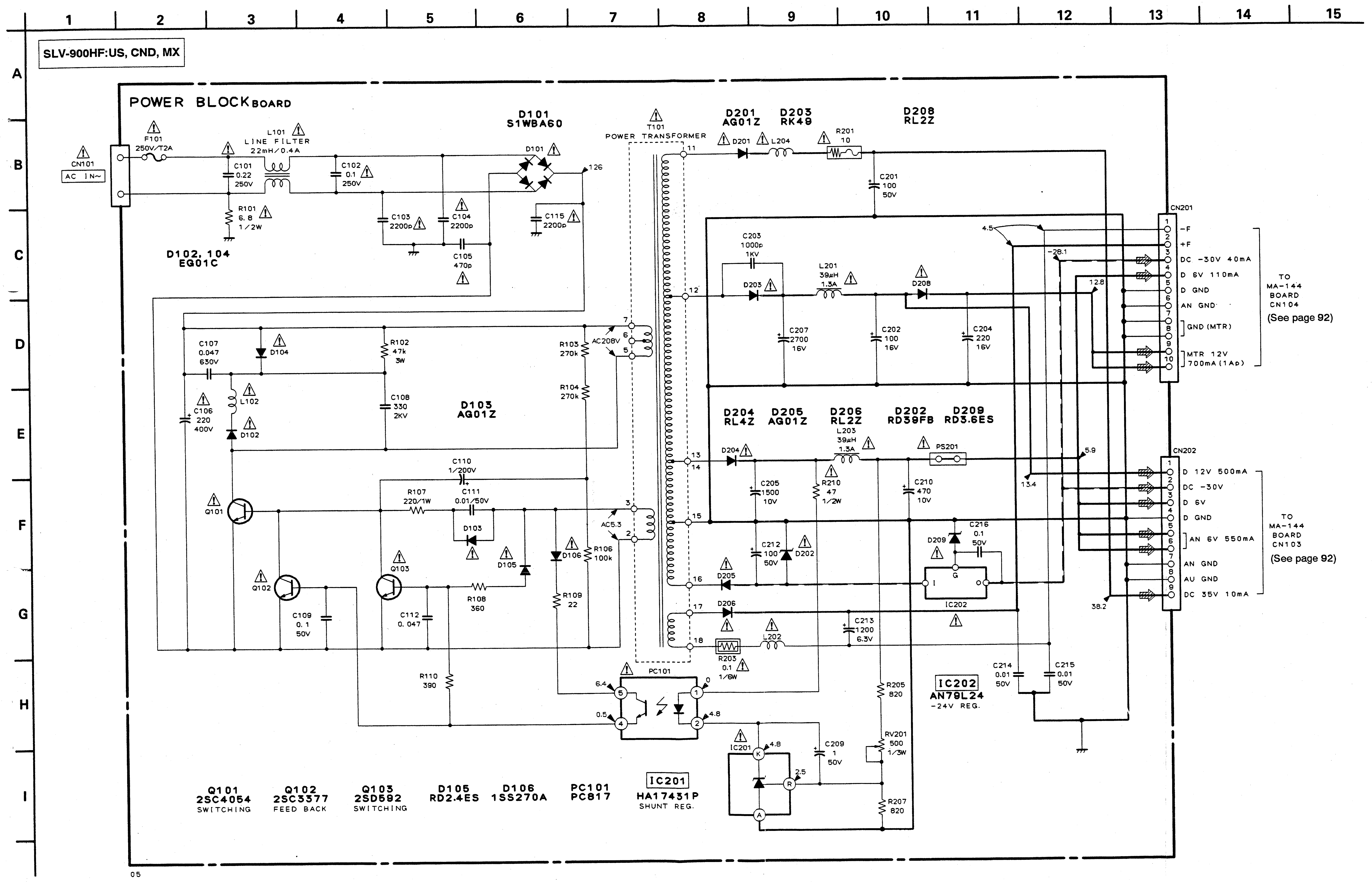
- Signal path

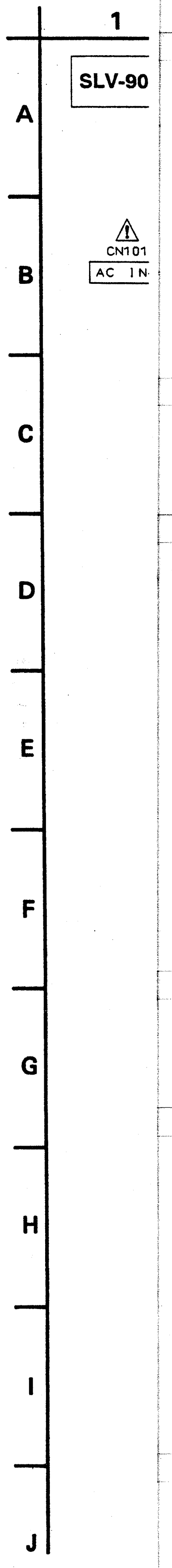
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

MODE CONTROL

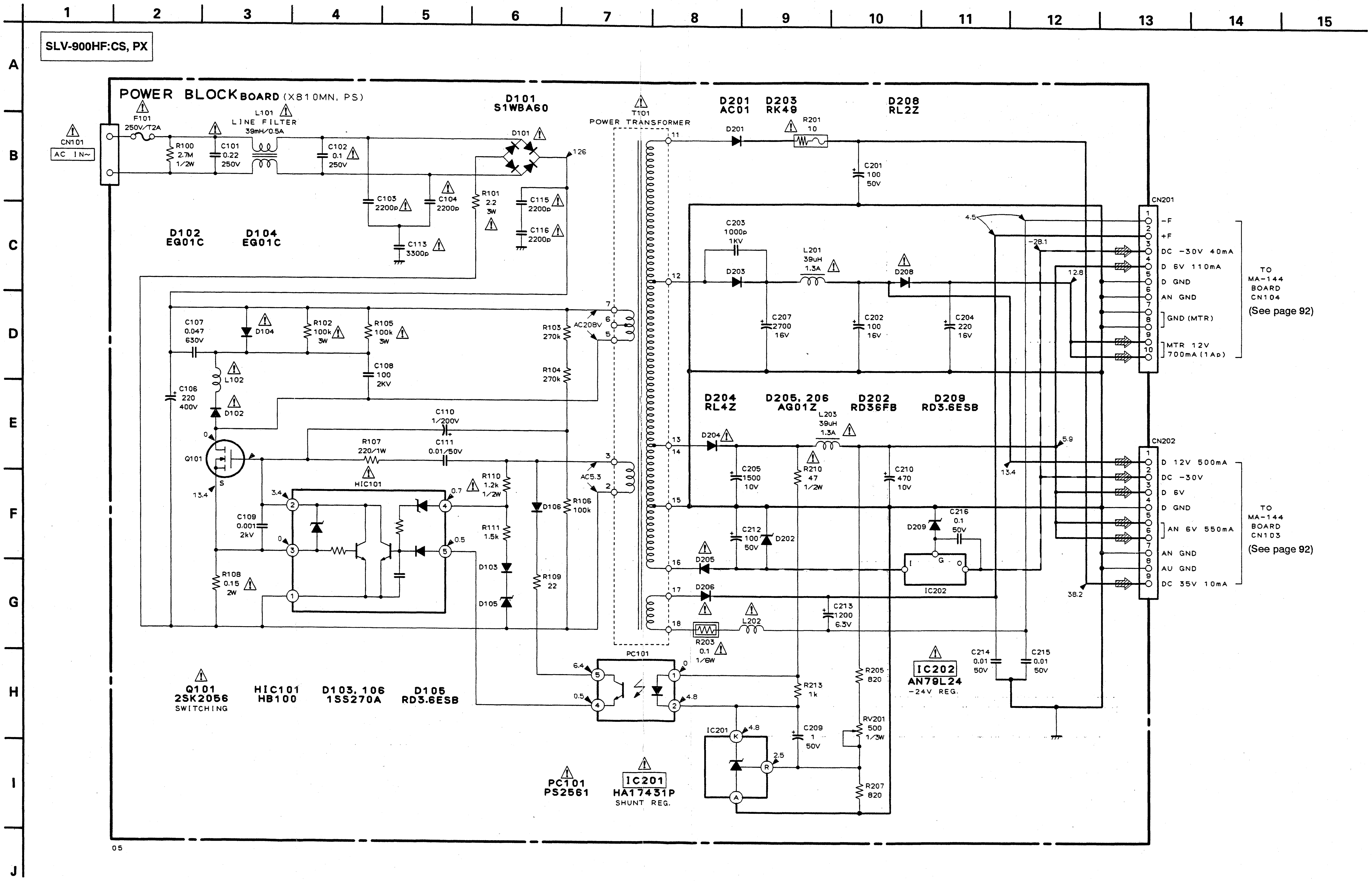
POWER BLOCK SCHEMATIC DIAGRAM

– Ref. No.: POWER BLOCK Board; 7,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
SLV-900HF:US, CND, MX
POWER BLOCK BOARD
CN101
AC IN~
F101
250V/T2A
L101
LINE FILTER
22mH/0.4A
C101
0.22
250V
C102
0.1
250V
R101
6.8
1/2W
C103
2200p
C104
2200p
C105
470p
D101
S1WBA60
D101
126
C115
2200p
D102, 104
EG01C
T101
POWER TRANSFORMER
D201
AG01Z
D203
RK49
D208
RL2Z
D201
L204
R201
10
C201
100
50V
C203
1000p
1KV
D203
L201
39μH
1.3A
D208
C207
2700
16V
C202
100
16V
C204
220
16V
4.5
-28.1
12.8
CN201
-F
+F
DC -30V 40mA
D 6V 110mA
D GND
AN GND
GND (MTR)
MTR 12V
700mA (1Ap)
TO
MA-144
BOARD
CN104
(See page 92)
C107
0.047
630V
D104
R102
47k
3W
R103
270k
AC208V
R104
270k
C106
220
400V
L102
D102
C108
330
2KV
D103
AG01Z
C110
1/200V
R107
220/1W
C111
0.01/50V
Q101
D103
D105
D106
R106
100k
AC5.3
Q102
Q103
R108
360
R109
22
C109
0.1
50V
C112
0.047
R110
390
D204
RL4Z
D205
AG01Z
D206
RL2Z
D202
RD39FB
D209
RD3.6ES
L203
39μH
1.3A
PS201
D204
R210
47
1/2W
C205
1500
10V
C210
470
10V
13.4
5.9
CN202
D 12V 500mA
DC -30V
D 6V
D GND
AN 6V 550mA
AN GND
AU GND
DC 35V 10mA
TO
MA-144
BOARD
CN103
(See page 92)
C212
100
50V
D202
D205
C216
0.1
50V
D209
G
I
O
IC202
38.2
D206
C213
1200
6.3V
L202
R203
0.1
1/6W
C214
0.01
50V
C215
0.01
50V
PC101
6.4
0.5
0
4.8
R205
820
IC202
AN79L24
-24V REG.
IC201
4.8
2.5
C209
1
50V
RV201
500
1/3W
R207
820
K
R
A
Q101
2SC4054
SWITCHING
Q102
2SC3377
FEED BACK
Q103
2SD592
SWITCHING
D105
RD2.4ES
D106
1SS270A
PC101
PC817
IC201
HA17431P
SHUNT REG.
11
12
13
14
15
16
17
18
7
6
5
3
2
05


1
SLV-90
A
B
C
D
E
F
G
H
I
J
CN101
AC IN

POWER BLOCK

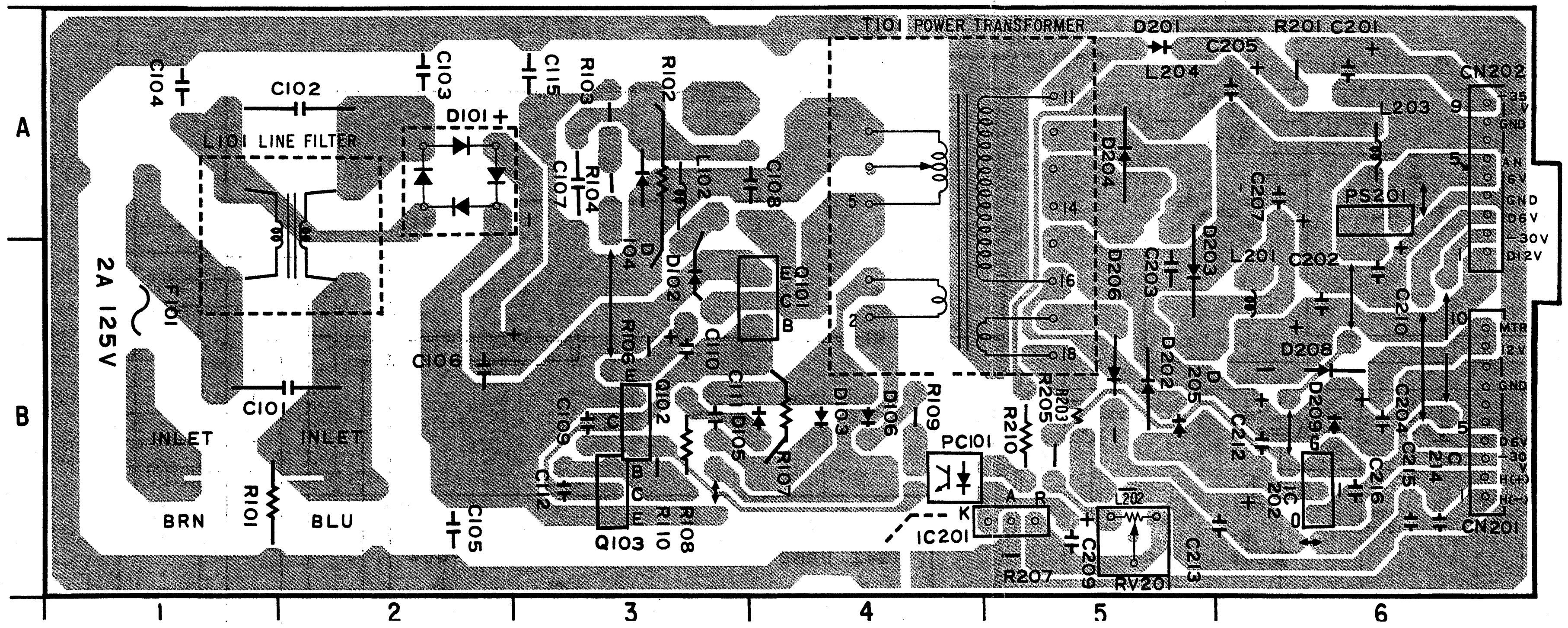

SLV-900HF:CS, PX
POWER BLOCK BOARD (X810MN, PS)
CN101 AC IN~
F101 250V/T2A
R100 2.7M 1/2W
C101 0.22 250V
L101 LINE FILTER 39mH/0.5A
C102 0.1 250V
C103 2200p
C104 2200p
C113 3300p
D101 S1WBA60
R101 2.2 3W
C115 2200p
C116 2200p
T101 POWER TRANSFORMER
D201 AC01
D203 RK49
R201 10
C201 100 50V
D208 RL2Z
C203 1000p 1KV
L201 39uH 1.3A
C207 2700 16V
C202 100 16V
C204 220 16V
D102 EG01C
D104 EG01C
C107 0.047 630V
R102 100k 3W
R105 100k 3W
R103 270k
R104 270k
AC208V
C108 100 2KV
L102
C106 220 400V
C110 1/200V
R107 220/1W
C111 0.01/50V
Q101
HIC101
R110 1.2k 1/2W
R111 1.5k
C109 0.001 2kV
D106
R106 100k
AC5.3
R108 0.15 2W
D103
D105
R109 22
D204 RL4Z
D205, 206 AG01Z
D202 RD36FB
D209 RD3.6ESB
L203 39uH 1.3A
C205 1500 10V
R210 47 1/2W
C210 470 10V
C216 0.1 50V
C212 100 50V
IC202
C213 1200 6.3V
L202
R203 0.1 1/6W
PC101
R213 1k
C209 1 50V
IC201
R205 820
RV201 500 1/3W
R207 820
C214 0.01 50V
C215 0.01 50V
IC202 AN79L24 -24V REG.
Q101 2SK2056 SWITCHING
HIC101 HB100
D103, 106 1SS270A
D105 RD3.6ESB
PC101 PS2561
IC201 HA17431P SHUNT REG.
CN201
-F
+F
DC -30V 40mA
D 6V 110mA
D GND
AN GND
GND (MTR)
MTR 12V 700mA (1Ap)
TO MA-144 BOARD CN104 (See page 92)
CN202
D 12V 500mA
DC -30V
D 6V
D GND
AN 6V 550mA
AN GND
AU GND
DC 35V 10mA
TO MA-144 BOARD CN103 (See page 92)
126
4.5
-28.1
12.8
5.9
13.4
38.2
3.4
0.7
0.5
6.4
4.8
2.5
05

POWER BLOCK PRINTED WIRING BOARD

– Ref. No.: POWER BLOCK Board; 7,000 series –

SLV-900HF:US, CND, MX

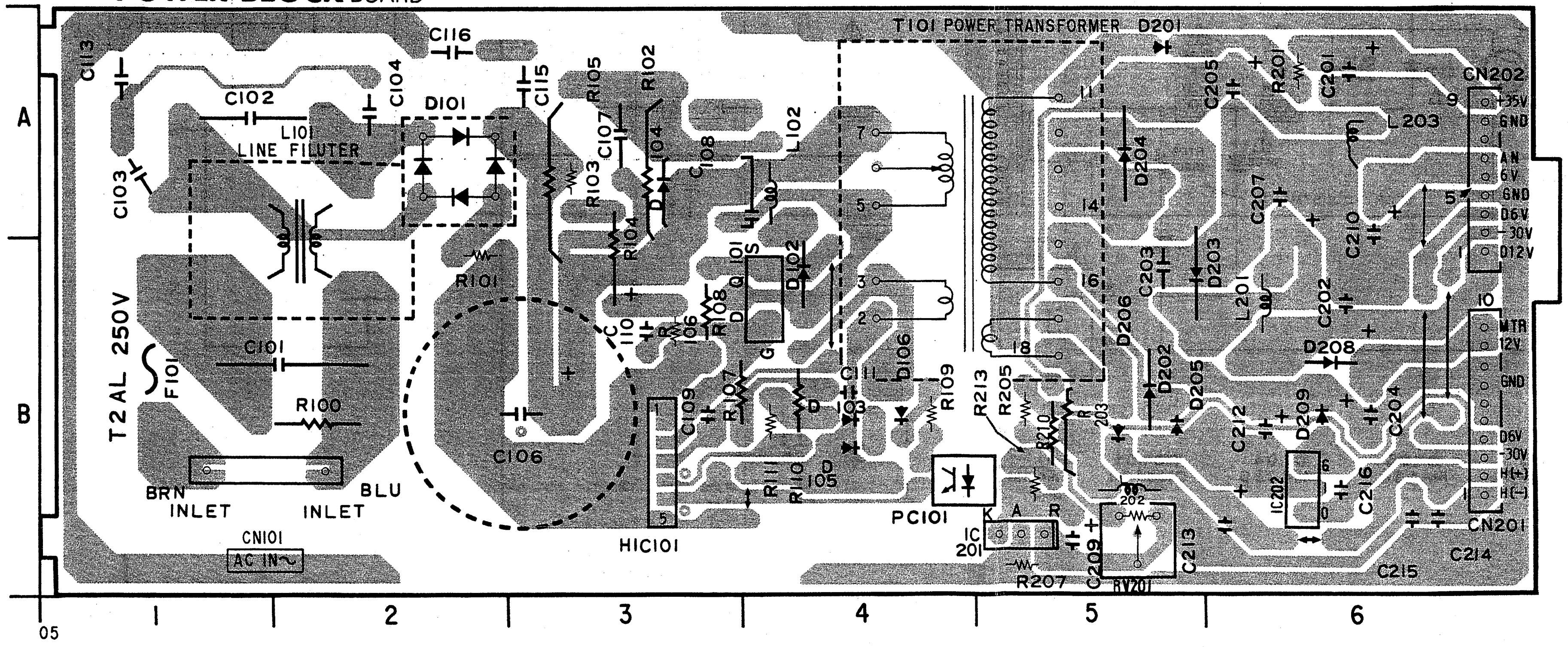
POWER BLOCK BOARD


A
B
1
2
3
4
5
6
C104
C102
C103
C115
R103
R102
D101
L101 LINE FILTER
C107
R104
D104
L102
D102
C108
Q101
E
C
B
2A 125V
F101
C106
R106
C110
C101
INLET
INLET
C109
Q102
C111
D105
D103
D106
R109
R107
C112
Q103
R110
R108
R101
BRN
BLU
C105
T101 POWER TRANSFORMER
D201
C205
R201
C201
L204
L203
CN202
D204
C207
PS201
D203
C203
L201
C202
C210
D206
D202
D205
D208
R210
R205
R203
PC101
C212
D209
C204
C214
IC202
C216
C215
IC201
A
K
R
L202
C209
C213
RV201
R207
CN201
+35V
GND
AN
6V
GND
D6V
−30V
D12V
MTR
12V
GND
D6V
−30
H(+)
H(−)

POWER BLOCK BOARD	
D101	A-2
D102	B-3
D103	B-4
D104	A-3
D105	B-4
D106	B-4
D201	A-5
D202	B-5
D203	B-5
D204	A-5
D205	B-5
D206	B-5
D208	B-6
D209	B-6
IC201	B-5
IC202	B-6
Q101	B-4
Q102	B-3
Q103	B-3

SLV-900HF:Chile, PX

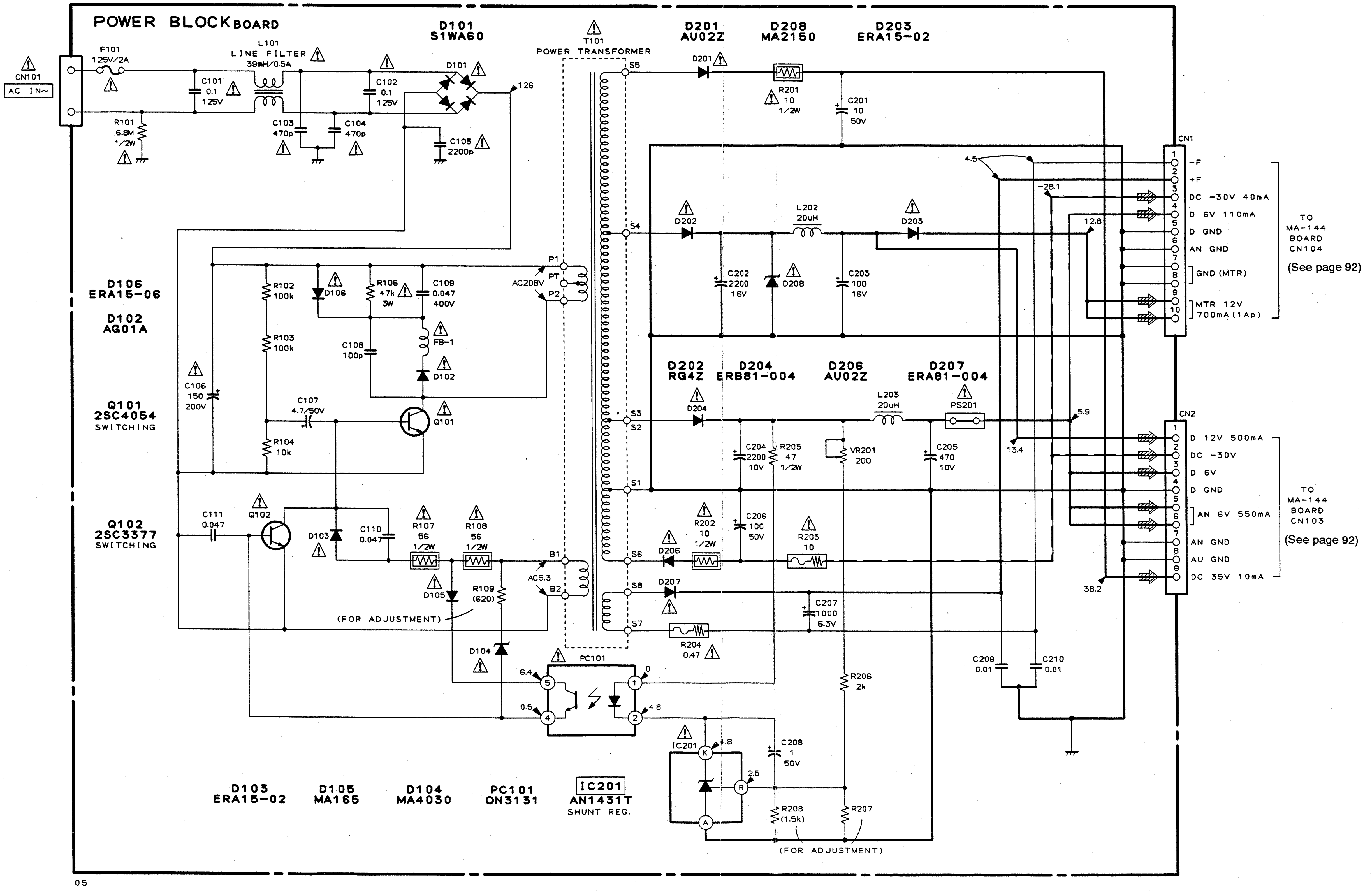
POWER BLOCK BOARD


A
B
1
2
3
4
5
6
05
C113
C116
C102
C104
C115
R105
R102
L101
LINE FILUTER
D101
C107
D104
L102
C103
R103
C108
R104
Q101
D102
R101
T2AL 250V
F101
C101
R100
C110
R106
R108
C106
C109
R107
HIC101
C111
D103
D106
R109
R111
R110
D105
BRN
INLET
BLU
INLET
CN101
AC IN~
T101 POWER TRANSFORMER
D201
C205
R201
C201
L203
CN202
D204
C207
C210
C203
D203
L201
C202
D206
D202
D205
D208
R213
R205
R210
R203
D209
C204
C212
PC101
IC202
C216
IC201
A
K
R
202
C209
C213
RV201
R207
C215
C214
CN201
+35V
GND
AN
6V
GND
D6V
−30V
D12V
MTR
12V
GND
D6V
−30V
H(+)
H(−)

POWER BLOCK BOARD	
D101	A-2
D102	B-3
D103	B-4
D104	A-3
D105	B-4
D106	B-4
D201	A-5
D202	B-5
D203	B-5
D204	A-5
D205	B-5
D206	B-5
D208	B-6
D209	B-6
IC201	B-5
IC202	B-6
Q101	B-4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

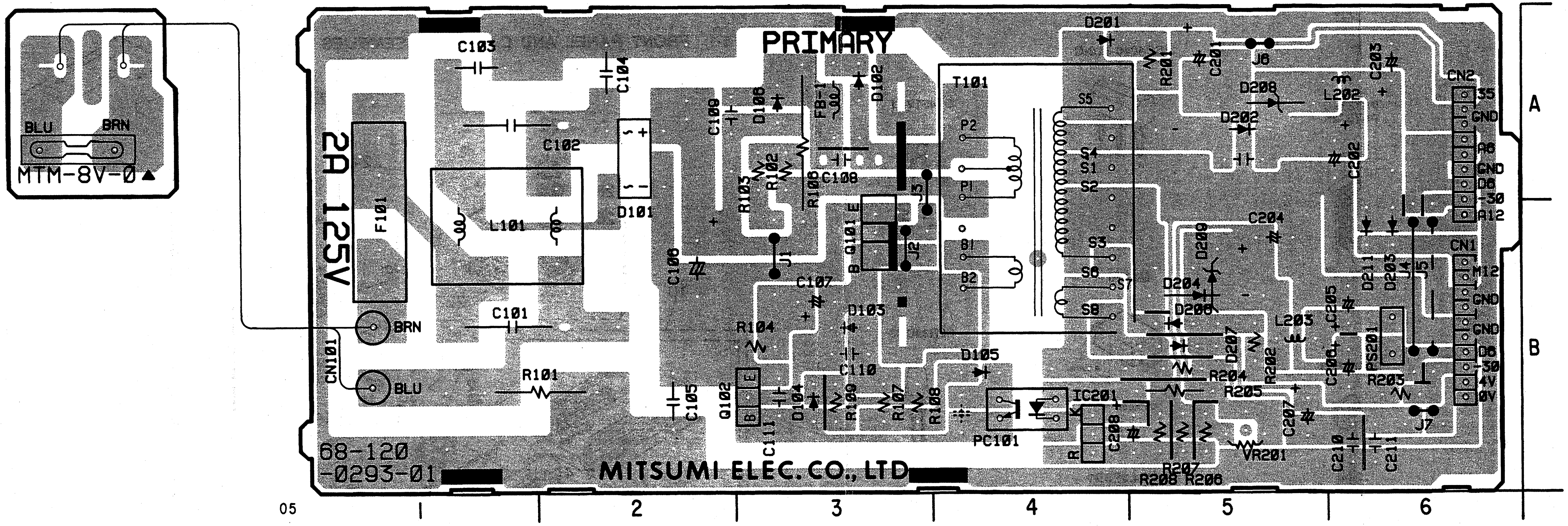
SLV-750HF/751HF


POWER BLOCK BOARD
CN101
AC IN~
F101
125V/2A
L101
LINE FILTER
39mH/0.5A
C101
0.1
125V
C102
0.1
125V
R101
6.8M
1/2W
C103
470p
C104
470p
C105
2200p
D101
S1WA60
126
T101
POWER TRANSFORMER
S5
S4
S3
S2
S1
S6
S8
S7
P1
PT
P2
AC208V
B1
B2
AC5.3
D201
AU02Z
D208
MA2150
D203
ERA15-02
R201
10
1/2W
C201
10
50V
D202
L202
20uH
C202
2200
16V
C203
100
16V
D106
ERA15-06
D102
AG01A
R102
100k
R103
100k
R104
10k
R106
47k
3W
C109
0.047
400V
C108
100p
FB-1
C106
150
200V
C107
4.7/50V
Q101
2SC4054
SWITCHING
Q102
2SC3377
SWITCHING
C111
0.047
D103
C110
0.047
R107
56
1/2W
R108
56
1/2W
D105
R109
(620)
(FOR ADJUSTMENT)
D104
D202
RG4Z
D204
ERB81-004
D206
AU02Z
D207
ERA81-004
L203
20uH
PS201
C204
2200
10V
R205
47
1/2W
VR201
200
C205
470
10V
R202
10
1/2W
C206
100
50V
R203
10
C207
1000
6.3V
R204
0.47
PC101
6.4
0.5
0
4.8
IC201
K
R
A
2.5
C208
1
50V
R206
2k
R208
(1.5k)
R207
(FOR ADJUSTMENT)
C209
0.01
C210
0.01
4.5
-28.1
12.8
5.9
13.4
38.2
CN1
1 -F
2 +F
3 DC -30V 40mA
4 D 6V 110mA
5 D GND
6 AN GND
7
8 GND (MTR)
9
10 MTR 12V 700mA (1Ap)
TO MA-144 BOARD CN104
(See page 92)
CN2
1 D 12V 500mA
2 DC -30V
3 D 6V
4 D GND
5
6 AN 6V 550mA
7 AN GND
8 AU GND
9 DC 35V 10mA
TO MA-144 BOARD CN103
(See page 92)
D103
ERA15-02
D105
MA165
D104
MA4030
PC101
ON3131
IC201
AN1431T
SHUNT REG.
05

NER BLOCK

SLV-750HF/751HF

POWER BLOCK BOARD

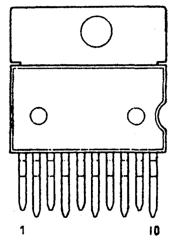

MTM-8V-0
BLU
BRN
PRIMARY
2A 125V
F101
L101
C101
C102
C103
C104
C105
C106
C107
C108
C109
C110
C111
D101
D102
D103
D104
D105
D106
FB-1
R101
R102
R103
R104
R105
R107
R108
R109
Q101
Q102
J1
J2
J3
CN101
T101
P1
P2
B1
B2
S1
S2
S3
S4
S5
S6
S7
S8
PC101
IC201
D201
D202
D203
D204
D206
D207
D208
D209
D211
C201
C202
C203
C204
C205
C206
C207
C208
C210
C211
R201
R202
R203
R204
R205
R206
R207
R208
VR201
L202
L203
PS201
J4
J5
J6
J7
CN1
CN2
S5
GND
A8
D8
-30
A12
M12
4V
0V
68-120
-0293-01
MITSUMI ELEC. CO., LTD
05
1
2
3
4
5
6
A
B

POWER BLOCK BOARD

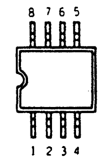
D101	A-2
D102	A-3
D103	B-3
D104	B-3
D105	B-4
D106	A-3
D201	A-4
D202	A-5
D203	B-6
D204	B-5
D206	B-5
D207	B-5
D208	A-5
D209	B-5
D211	B-6
IC201	B-4
Q101	B-3
Q102	B-3

-3. SEMICONDUCTORS

BA6238A

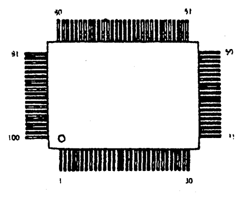


BA7755AF
TL082CPS

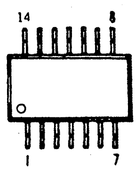


(TOP VIEW)

CXP80724-060Q
MB89095-110
XLH7772KS-VP

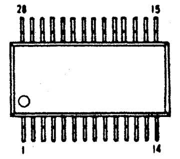


LA7218M



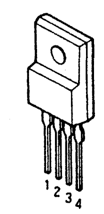
(TOP VIEW)

MB90084PF-128

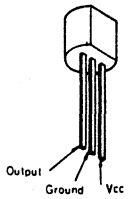


(TOP VIEW)

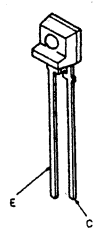
PQ09RF11
PQ12RF11



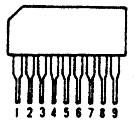
PST572C
PST572K



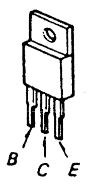
PT483F1S



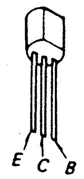
LVA522SA



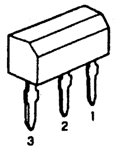
2SA-473-K



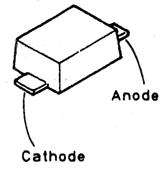
2SA-733-K



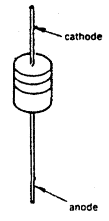
2SC4040-TL2-Q



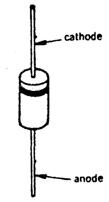
MA110



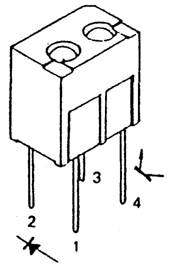
RD4.3ESB1
RD4.7ESB2
RD6.2ESB2
RD6.8ESB1
RD8.2ESB2
RD33ESB2
1SS119
11ES2



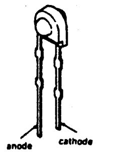
10E1N



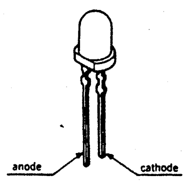
PS6002



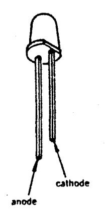
GL451VS1



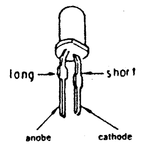
SLR34DC3



SLR34MC3
SLR34VC3



TLY123



SECTION 5
EXPLODED VIEWS

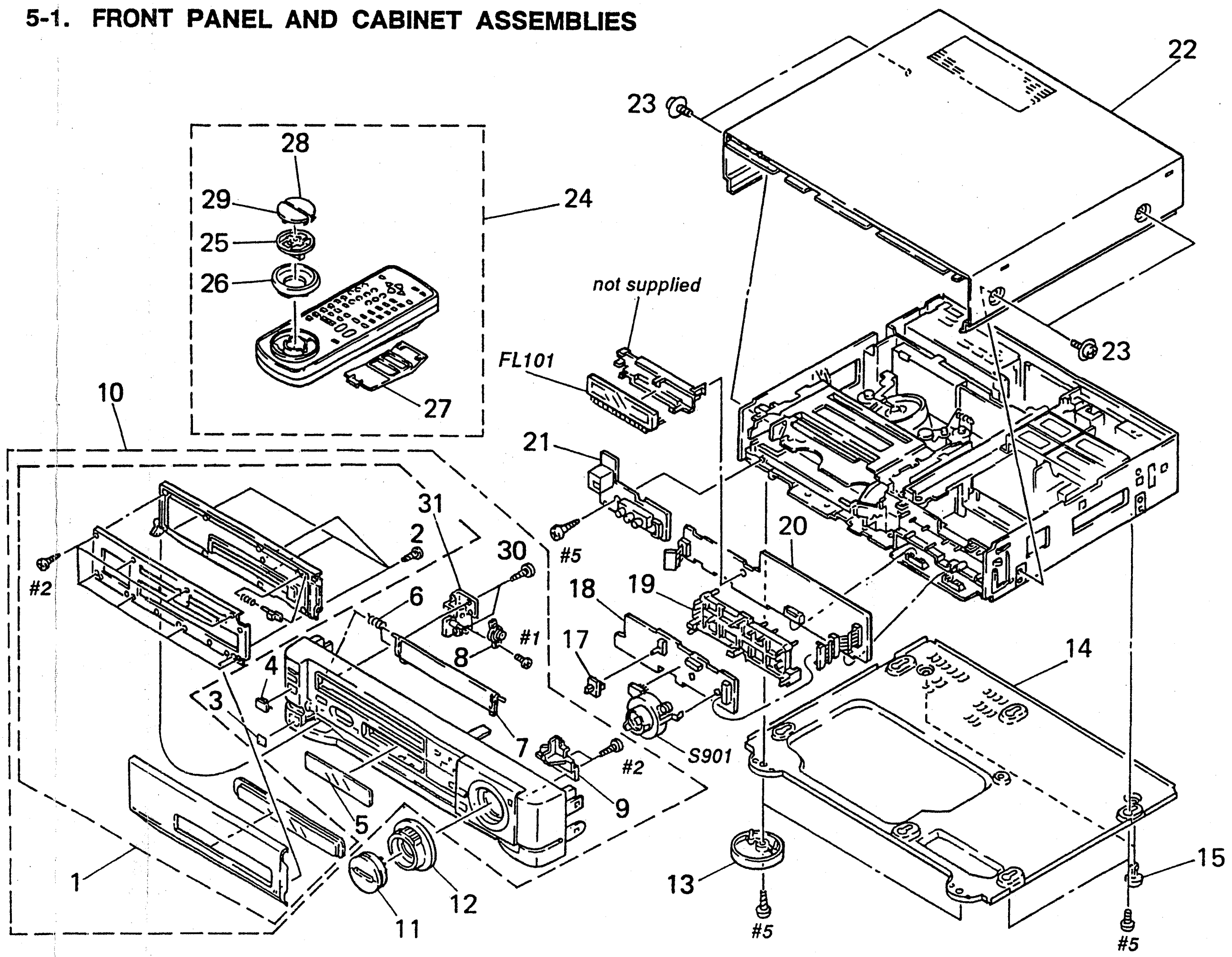
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "∗" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

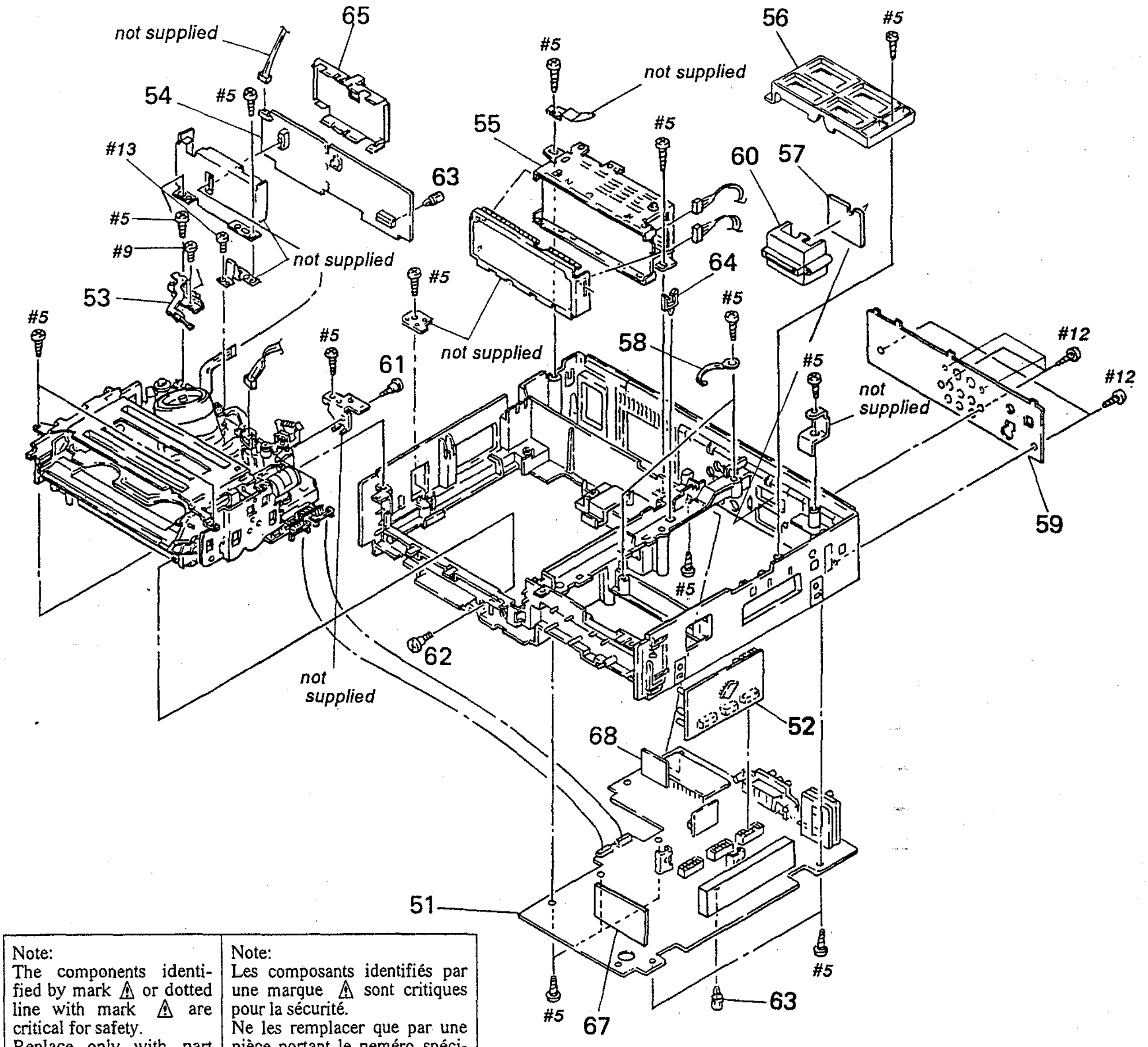
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

5-1. FRONT PANEL AND CABINET ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3942-323-1	DOOR BLOCK ASSY (H). HALF (750HF)	
1	X-3942-333-1	DOOR BLOCK ASSY (H). HALF (751HF)	
1	X-3942-334-1	DOOR BLOCK ASSY (H). HALF (900HF)	
2	4-908-792-31	SCREW (B2) (M2X4). TAPPING	
* 3	3-703-713-41	STICKER. SONY SYMBOL (10)	
4	3-946-620-01	FILTER. REMOTE CONTROL	
* 5	3-951-087-01	PLATE. TRANSPARENT. PANEL	
6	3-951-089-01	SPRING (GE). FL	
7	3-951-086-01	DOOR. CASSETTE (750HF/900HF)	
7	3-951-086-61	DOOR. CASSETTE (751HF)	
8	3-319-224-11	DAMPER. SMALL	
* 9	3-951-080-01	PLATE (RIGHT). FULCRUM. DOOR	
10	X-3942-322-1	PANEL ASSY. FRONT (750HF)	
10	X-3942-327-1	PANEL ASSY. FRONT (900HF)	
10	X-3942-331-1	PANEL ASSY. FRONT (751HF)	
11	X-3942-217-1	BUTTON ASSY. FUNCTION (750HF/900HF)	
12	3-944-572-11	RING. SHUTTLE	
13	3-951-093-01	INSULATOR	
* 14	3-951-092-01	PLATE. BOTTOM	
15	3-670-155-11	LEG	
17	3-744-217-01	KNOB. SELECTION	
* 18	A-6756-901-A	MF-173 BOARD. COMPLETE (750HF/751HF)	
* 18	A-6756-914-A	MF-173 BOARD. COMPLETE (900HF)	
* 19	3-951-084-01	HOLDER. MF	
* 20	A-6756-900-A	MF-172 BOARD. COMPLETE (750HF:US/751HF:US)	
* 20	A-6756-909-A	MF-172 BOARD. COMPLETE (900HF:CND)	
* 20	A-6756-911-A	MF-172 BOARD. COMPLETE (750HF:CND/751HF:CND)	
* 20	A-6756-913-A	MF-172 BOARD. COMPLETE (900HF:US. MX. CHL. PX)	
* 21	A-6754-461-A	MF-171 BOARD. COMPLETE (750HF/751HF)	
* 21	A-6754-479-A	MF-171 BOARD. COMPLETE (900HF)	
22	3-741-985-21	CASE. UPPER (750HF/900HF)	
* 22	3-749-656-11	CASE. UPPER (751HF)	
23	3-710-901-11	SCREW. TAPPING	
24	1-466-916-11	REMOTE COMMANDER (RMT-V129) (900HF)	
24	1-466-968-31	REMOTE COMMANDER (RMT-V130) (750HF/751HF)	
25	3-941-619-11	HOLDER. DIAL	
26	3-951-746-01	RING. SHUTTLE	
27	3-943-535-01	COVER. BATTERY	
28	3-941-617-61	BUTTON. PLAYBACK	
29	3-941-618-51	BUTTON. STOP	
30	4-921-277-11	SCREW (B2. 6X8). TAPPING. BIND	
* 31	X-3942-319-1	PLATE (LEFT) BLOCK ASSY. FULCRUM	
FL101	1-517-132-11	INDICATOR TUBE. FLUORESCENT	
S901	1-572-662-11	SWITCH ROTARY (DUAL MODE SHUTTLE)	

5-2. MAIN BOARD AND POWER BLOCK ASSEMBLIES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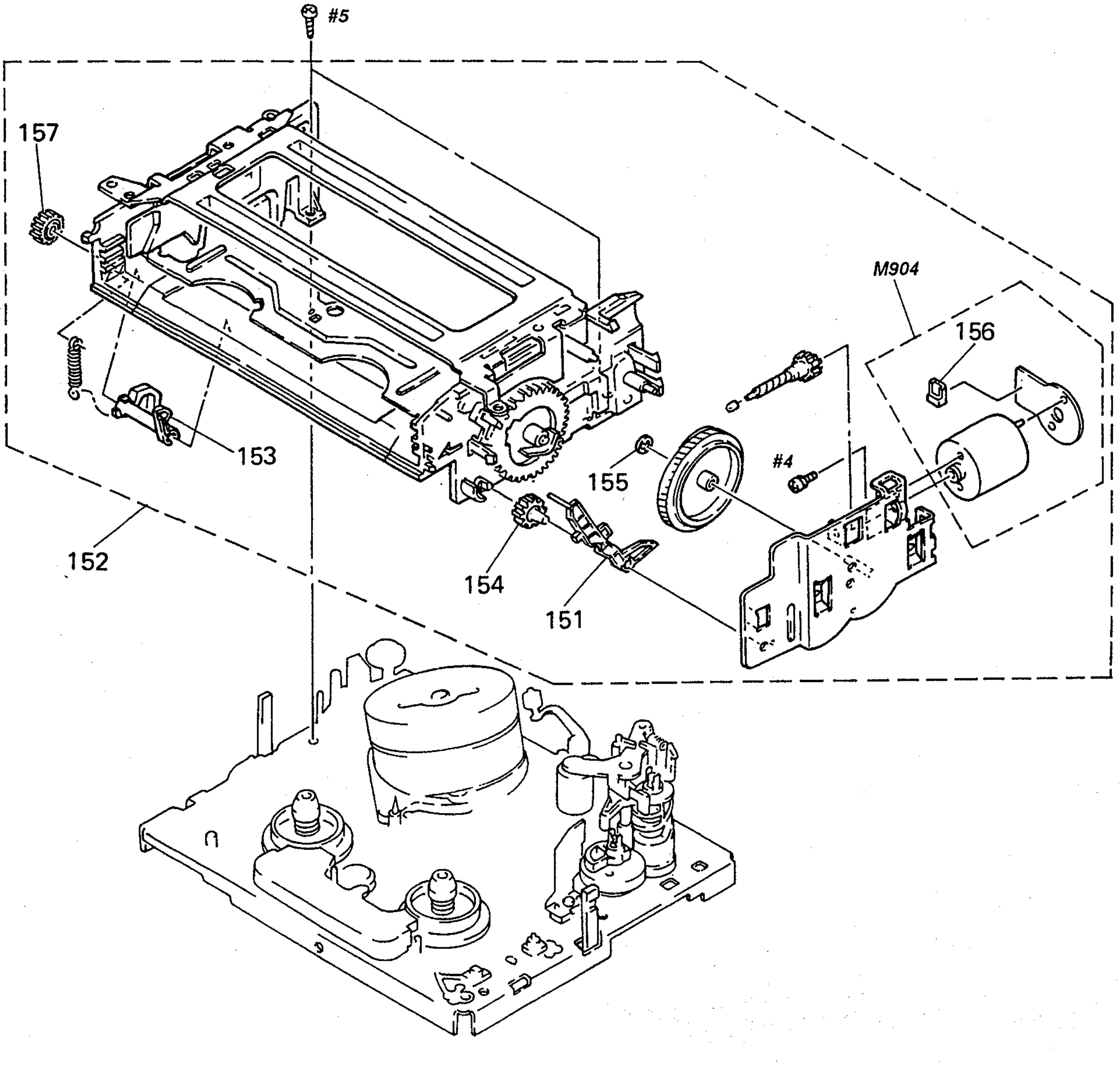
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
* 51	A-6756-899-A	MA-144 BOARD, COMPLETE (750HF/751HF)	
* 51	A-6756-912-A	MA-144 BOARD, COMPLETE (900HF)	
* 52	A-6713-498-A	HF-27 BOARD, COMPLETE	
53	X-3733-304-1	GROUND ASSY, SHAFT	
* 54	A-6727-473-A	RP-149 BOARD, COMPLETE (750HF/751HF)	
* 54	A-6727-474-A	PR-149 BOARD, COMPLETE (900HF)	
⚠55	1-413-788-11	POWER BLOCK (750HF/751HF)	
⚠55	1-413-792-11	POWER BLOCK (900HF:US, CND, MX)	
⚠55	1-413-793-11	POWER BLOCK (900HF:CHL, PX)	
* 56	3-951-118-01	HOLDER, FRAME	
57	A-6754-478-A	CJ-1 BOARD, COMPLETE	
58	3-703-840-01	SCREW, TAPPING	

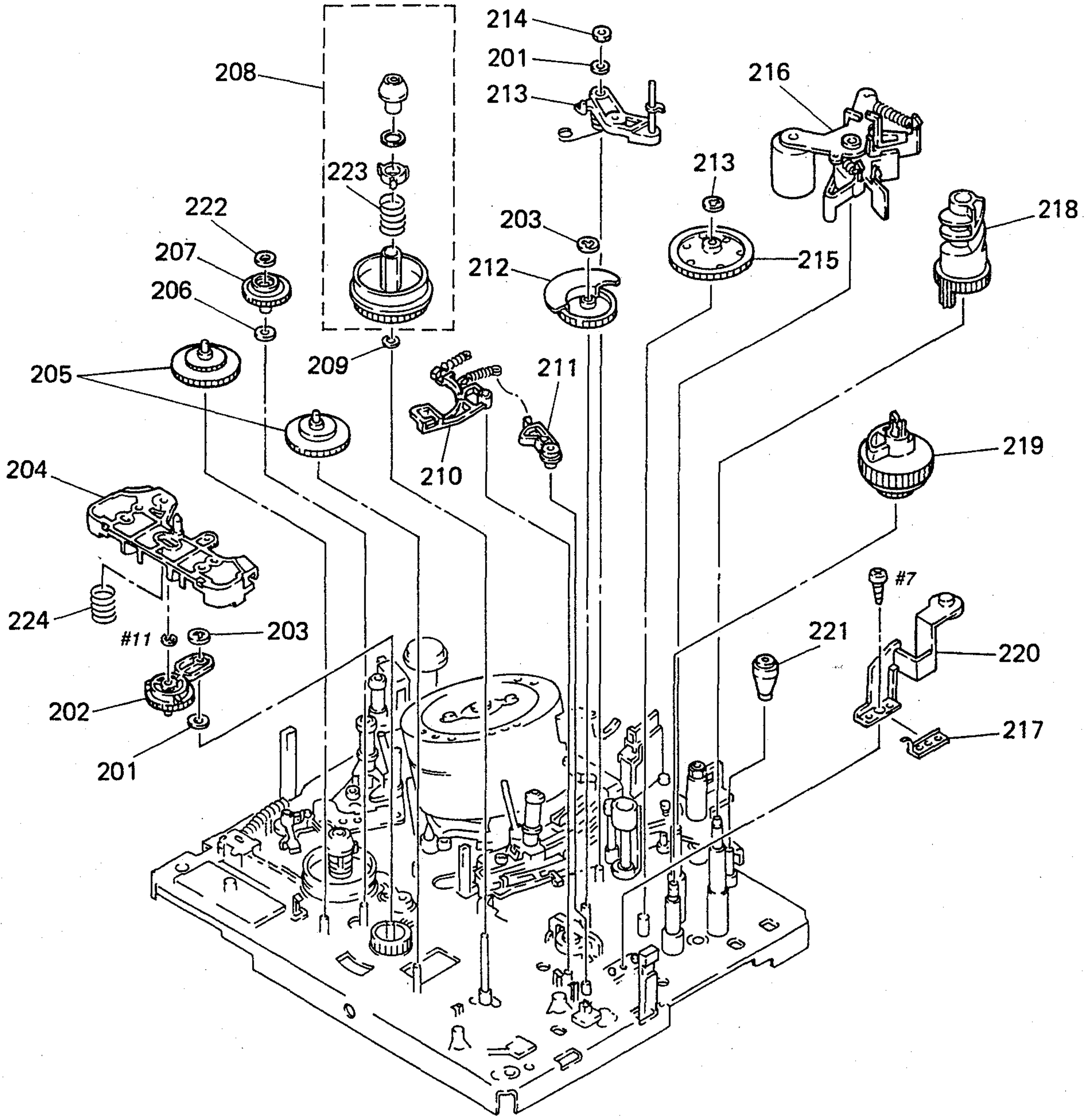
Ref. No.	Part No.	Description	Remark
* 59	3-951-081-51	PLATE, ORNAMENTAL, JACK(750HF)	
* 59	3-951-081-81	PLATE, ORNAMENTAL, JACK(900HF:US, CND, MX)	
59	3-951-081-91	PLATE, ORNAMENTAL, JACK(751HF)	
59	3-951-528-31	PLATE, ORNAMENTAL, JACK (900HF:CHL, PX)	
* 60	3-951-119-01	HOLDER, JACK	
61	3-736-055-01	SCREW (3X8), TAPPING	
62	3-741-948-01	SCREW (3), SPECIAL (+) TAPPING	
63	3-682-057-11	SPACER (SMALL)	
64	4-309-753-00	HOLDER, WIRE (750HF:CND/751HF/900HF)	
* 65	3-951-091-01	CASE (LID), SHIELD, RP	
* 67	A-6754-477-A	CB-43 BOARD, COMPLETE	
* 68	A-6754-499-A	ST-52 BOARD, COMPLETE	

5-3. FL CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	3-741-935-06	LEVER, FLAT DOOR	
152	A-6751-421-A	FL BLOCK ASSY (M2)	
153	3-736-163-01	LEVER, ERASING PROTECTION	
154	X-3727-775-2	GEAR (RIGHT) ASSY, MIDWAY	
155	3-696-510-01	WASHER (3), STOPPER	
156	1-506-482-11	PIN, CONNECTOR 3P	
157	3-736-044-02	GEAR (LEFT), MIDWAY	
M904	X-3727-784-1	MOTOR ASSY (LOADING)	

5-4. MECHANISM CHASSIS ASSEMBLY (1)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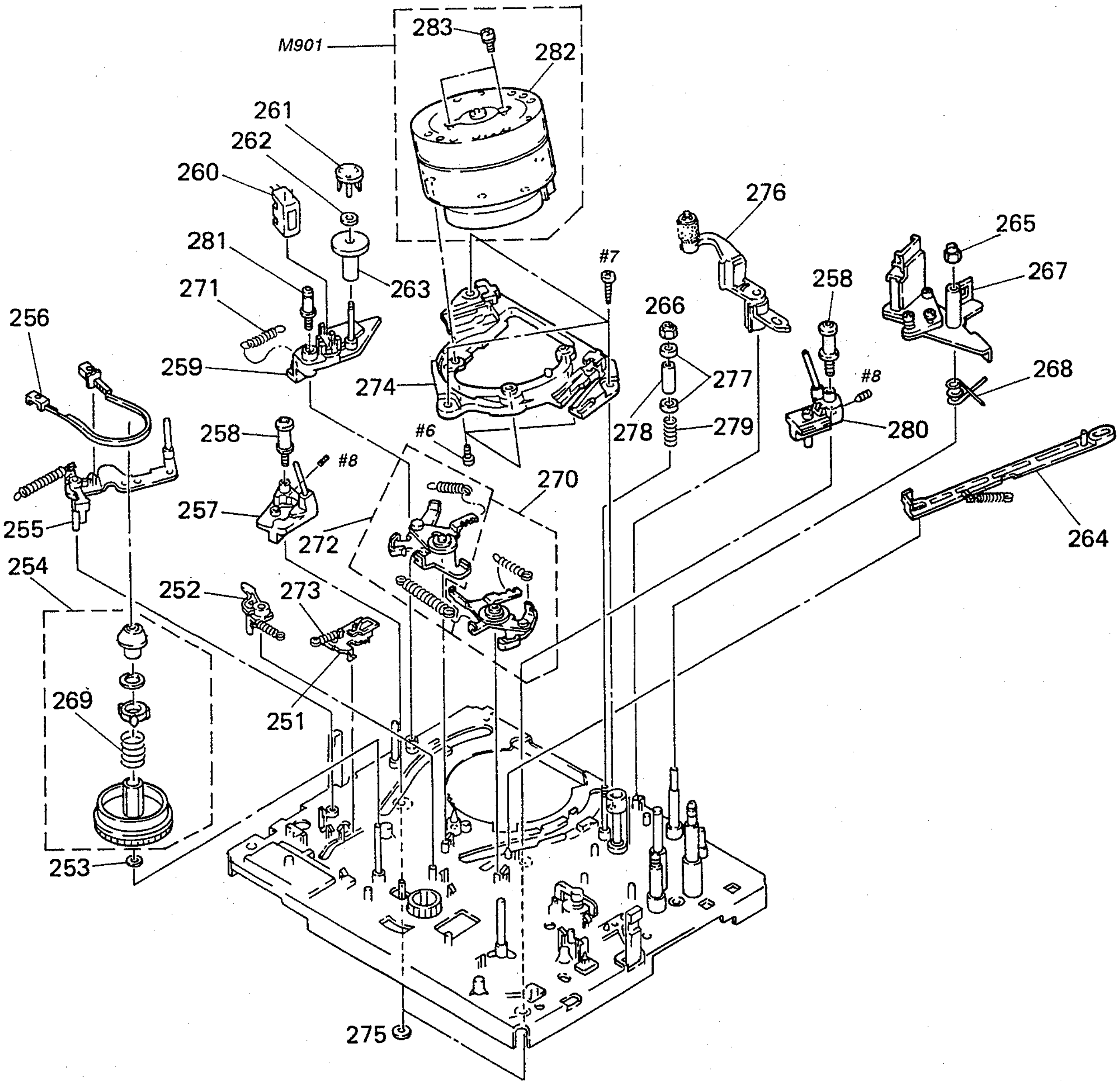
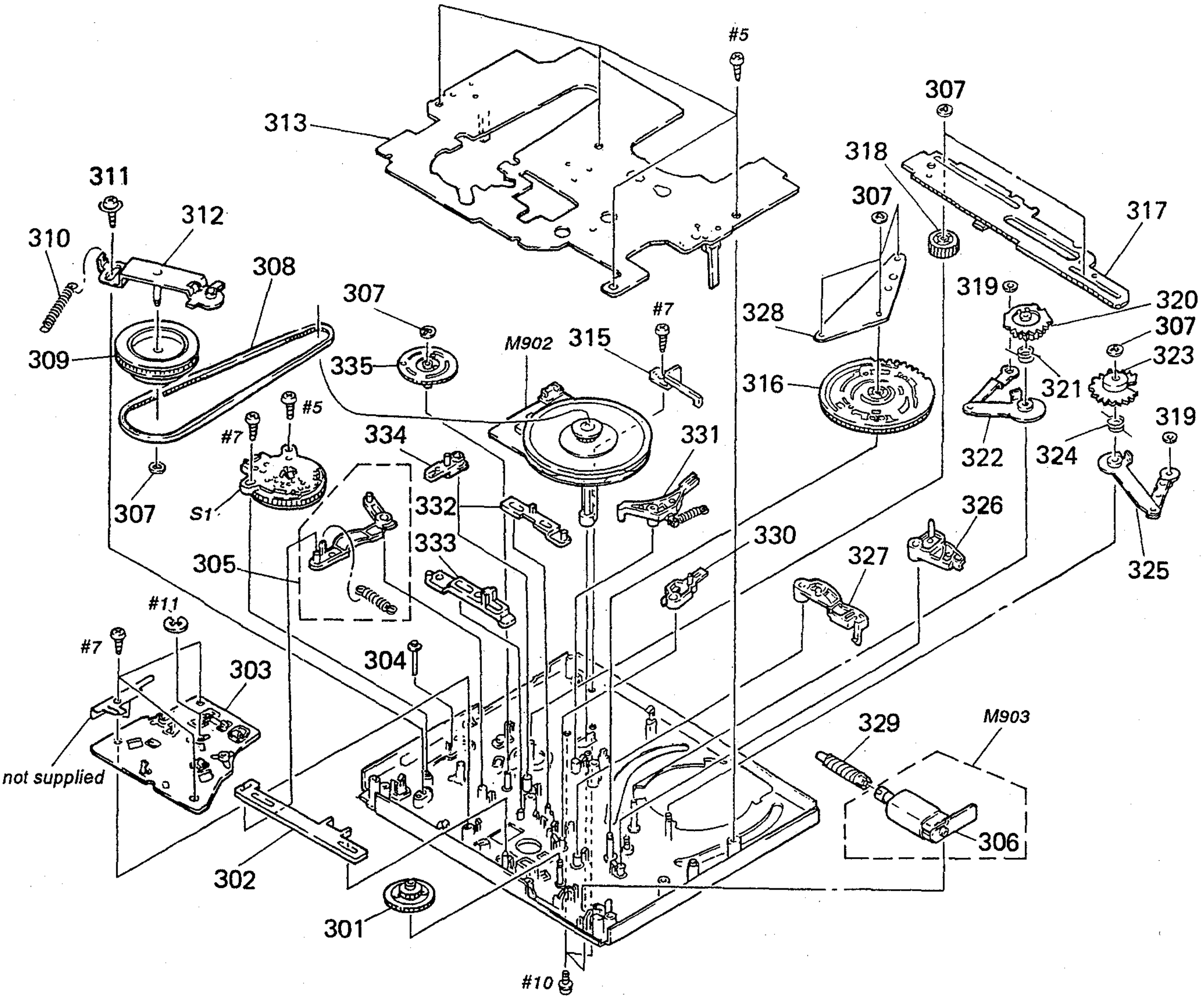
Ref. No.	Part No.	Description	Remark
201	3-701-438-11	WASHER, 2.5	
202	X-3727-776-1	ARM ASSY, PENDULUM	
203	3-669-595-00	WASHER (2), STOPPER	
204	3-736-172-02	RELEASE, LOCK, REEL	
205	X-3727-795-1	GEAR ASSY, RELAY	
206	3-736-074-01	RETAINER (SMALL), THRUST	
207	3-736-037-01	GEAR, REW	
208	X-3727-798-1	TABLE ASSY, REEL	
209	3-738-212-21	RETAINER, THRUST, REEL TABLE	
210	X-3727-764-1	BRAKE ASSY (S), T SOFT	
211	3-736-105-01	ARM, REV BRAKE	
212	3-736-143-01	GEAR, RVS CAM	
213	X-3942-218-1	ARM ASSY, RVS	
214	3-736-740-01	NUT (M2X0.25), NYLON	
215	3-736-116-01	GEAR, COMMUNICATION	
216	X-3727-770-1	PINCH ROLLER BLOCK ASSY	
217	3-744-227-01	SPRING, FL GROUND	
218	3-736-182-01	CAM, ELEVATOR	
219	3-943-700-01	GEAR, PRESS CAM	
220	3-946-652-01	OPENER, LID	
221	3-738-250-01	SCREW, AC ADJUSTMENT	
222	3-736-069-01	RETAINER, SPRING	
223	3-739-621-01	SPRING, COMPRESSION	
224	3-736-020-11	SPRING, COMPRESSION	

5-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
251	A-6759-483-A	TAKE-UP BLOCK ASSY, S	
252	X-3727-773-1	ARM ASSY (S), S SOFT BRAKE	
253	3-738-212-21	RETAINER, THRUST, REEL TABLE	
254	X-3941-194-1	TABLE ASSY, REEL, S	
255	X-3727-772-1	ARM ASSY, TENSION REGULATOR	
256	X-3727-797-1	BAND ASSY, TENSION REGULATOR	
257	X-3727-786-1	SHUTTLE (LEFT) ASSY	
258	X-3733-301-1	ROLLER ASSY, GUIDE	
259	X-3727-767-1	BASE ASSY, STABILIZER	
260	1-543-647-11	HEAD, FE	
261	3-736-082-01	RETAINER, TS THRUST	
262	3-741-925-01	RING, RETAINING	
263	X-3727-771-1	STABILIZER ASSY, TAPE	
264	X-3743-517-1	LEVER ASSY, RELEASE, C ROLLER	
265	3-942-767-01	NUT, AC HEIGHT ADJUSTMENT	
266	3-942-866-01	NUT (M3) (3X0.5), NYLON	
267	A-6761-129-A	HEAD BLOCK ASSY, ACE	
268	3-946-148-01	SPRING, TORSION	
269	3-739-621-01	SPRING, COMPRESSION	
270	X-3743-526-1	BRAKE ASSY (S), T	
271	3-736-745-01	SPRING, TENSION	
272	X-3733-337-2	BRAKE ASSY (S), S	
273	3-738-284-01	SPRING, TENSION	
274	X-3727-791-2	DRUM (BASE) ASSY	
275	3-736-073-01	SLIDER, POLYETHYLENE	
276	A-6747-267-A	ARM BLOCK ASSY (S), C ROLLER	
277	3-944-033-01	FLANGE, 7 GUIDE	
278	3-736-730-01	SLEEVE, #7 GUIDE	
279	3-749-099-01	SPRING (#7 GUIDE), COMPRESSION	
280	X-3727-787-1	SHUTTLE (RIGHT) ASSY	
281	X-3727-788-1	ROLLER ASSY, GUIDE, #2	
282	8-848-581-01	DRUM ASSY, ROTARY UPPER(DZR-49-R)(900HF)	
282	8-848-583-01	DRUM ASSY, ROTARY UPPER(DZR-50-R) (750HF/751HF)	
283	2-643-205-01	SCREW (PSW)3X8	
M901	8-848-580-11	DRUM ASSY (DZH-49A-R)(900HF)	
M901	8-848-582-01	DRUM ASSY (DZH-50A-R)(750HF/751HF)	

5-6. MECHANISM CHASSIS ASSEMBLY (3)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Ref. No.	Part No.	Description	Remark
301	3-736-015-01	WHEEL (CAM), WORM	
302	3-736-158-01	PLATE, SLIDE, PENDULUM	
303	A-6739-084-A	CHASSIS BLOCK ASSY, SUB	
304	3-736-091-01	PIN, SWITCH	
305	X-3729-924-1	ARM ASSY, PENDULUM FUNCTION	
* 306	1-633-460-11	CA-41 BOARD	
307	3-669-595-00	WASHER (2), STOPPER	
308	3-736-013-01	BELT, TIMING	
309	X-3727-782-1	PULLEY ASSY	
310	3-736-089-01	SPRING, TENSION	
311	3-749-796-11	SCREW, TAPPING +BVTP WASHER	
312	X-3727-761-1	ARM ASSY, ADJUSTMENT	
* 313	A-6754-462-A	MD-56 BOARD, COMPLETE	
315	3-736-744-01	RETAINER, ROTOR	
316	3-736-176-01	GEAR, CAM	
317	3-736-177-01	PLATE, SLIDE, MODE	
318	3-733-394-01	GEAR, RVS RELAY	
319	3-736-073-01	SLIDER, POLYETHYLENE	
320	3-736-148-01	GEAR (RIGHT), THREADING	

Ref. No.	Part No.	Description	Remark
321	3-736-092-01	SPRING (RIGHT), TORSION	
322	X-3727-777-1	ARM (RIGHT) ASSY, LOADING	
323	3-736-147-01	GEAR (LEFT), THREADING	
324	3-736-040-01	SPRING (LEFT), TORSION	
325	X-3727-778-1	ARM (LEFT) ASSY, LOADING	
326	3-736-142-01	ARM, TENSION REGULATOR FUNCTION	
327	3-736-140-01	ARM, S TAKE-UP	
328	3-733-396-01	HOLDER, CAM GEAR	
329	3-733-395-01	GEAR (CAM), WORM	
330	3-733-397-01	ARM, BRAKE FUNCTION	
331	X-3727-769-1	BRAKE ASSY, CAP	
332	3-733-398-01	PLATE, SLIDE, BRAKE	
333	3-736-103-01	PLATE, SLIDE, LIMITER	
334	3-736-016-01	ARM, LIMITER FUNCTION	
335	3-736-170-01	GEAR, RKB CAM	
M902	8-835-489-11	MOTOR, DC U-26K	
M903	X-3733-302-1	MOTOR ASSY, CAM	
S1	1-692-062-11	SWITCH, ROTARY	

CB-43 **CJ-1**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		CB-43 BOARD ***********	
		< CAPACITOR >	
C001	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C002	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C003	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C004	1-124-443-00	ELECT 100uF 20%	10V
C005	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C006	1-124-443-00	ELECT 100uF 20%	10V
		< CONNECTOR >	
* CN001	1-695-948-11	CONNECTOR, BOARD TO BOARD 10P	
		< DIODE >	
D003	8-719-911-19	DIODE 1SS119	
		< IC >	
IC001	8-752-840-28	IC CXP50216-005S	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	METAL CHIP 0 5%	1/10W
JR002	1-216-295-00	METAL CHIP 0 5%	1/10W
		< COIL >	
L001	1-414-183-41	INDUCTOR 10uH	
L002	1-414-183-41	INDUCTOR 10uH	
		< TRANSISTOR >	
Q001	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q002	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q003	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q004	8-729-421-19	TRANSISTOR UN2213	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R001	1-216-049-00	METAL CHIP 1K 5%	1/10W
R002	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R003	1-216-049-00	METAL CHIP 1K 5%	1/10W
R004	1-216-089-00	METAL CHIP 47K 5%	1/10W
R005	1-216-051-00	METAL CHIP 1.2K 5%	1/10W
R006	1-216-001-00	METAL CHIP 10 5%	1/10W
R007	1-216-049-00	METAL CHIP 1K 5%	1/10W
R008	1-216-049-00	METAL CHIP 1K 5%	1/10W
R009	1-216-049-00	METAL CHIP 1K 5%	1/10W
R010	1-216-049-00	METAL CHIP 1K 5%	1/10W
R011	1-216-049-00	METAL CHIP 1K 5%	1/10W
R012	1-216-049-00	METAL CHIP 1K 5%	1/10W
R013	1-216-049-00	METAL CHIP 1K 5%	1/10W
R014	1-216-049-00	METAL CHIP 1K 5%	1/10W
		< VIBRATOR >	
X001	1-577-101-11	VIBRATOR, CERAMIC	

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Ref. No.	Part No.	Description	Remark
	A-6754-478-A	CJ-1 BOARD, COMPLETE *******************	
		< CAPACITOR >	
C801	1-124-257-00	ELECT 2.2uF 20%	50V
C802	1-163-031-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN801	1-691-612-11	SOCKET, CONNECTOR 5P	
		< JACK >	
CNJ801	1-568-800-21	JACK, ULTRA SMALL (CABLE BOX CONTROL)	
CNJ802	1-563-935-11	JACK, STEREO HEADPHONE (CONTROL S IN)	

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D803	8-719-109-96	DIODE RD6.8ES-B1			
D804	8-719-109-96	DIODE RD6.8ES-B1			
D805	8-719-109-96	DIODE RD6.8ES-B1			
		< TRANSISTOR >			
Q801	8-729-424-18	TRANSISTOR UN2113			
Q802	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R801	1-216-056-00	METAL GLAZE	2K	5%	1/10W

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*	A-6713-498-A	HF-27 BOARD, COMPLETE *********************			
		< CAPACITOR >			
C201	1-123-382-00	ELECT	3.3uF	20%	100V
C202	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C203	1-124-916-11	ELECT	22uF	20%	63V
C204	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C205	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C206	1-137-367-11	FILM	0.0033uF	5%	50V
C207	1-137-370-11	FILM	0.01uF	5%	50V
C208	1-124-126-00	ELECT	47uF	20%	10V
C209	1-137-372-11	FILM	0.022uF	5%	50V
C210	1-124-927-11	ELECT	4.7uF	20%	100V
C211	1-124-907-11	ELECT	10uF	20%	50V
C212	1-124-916-11	ELECT	22uF	20%	63V
C213	1-124-126-00	ELECT	47uF	20%	10V
C214	1-124-903-11	ELECT	1uF	20%	50V
C215	1-124-907-11	ELECT	10uF	20%	50V
C216	1-137-370-11	FILM	0.01uF	5%	50V
C218	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C219	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C220	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C221	1-164-345-11	CERAMIC CHIP	0.082uF	10%	25V
C223	1-123-382-00	ELECT	3.3uF	20%	100V
C224	1-123-382-00	ELECT	3.3uF	20%	100V
C225	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C227	1-137-364-11	FILM	0.001uF	5%	50V
C228	1-124-903-11	ELECT	1uF	20%	50V
C229	1-124-443-00	ELECT	100uF	20%	10V
C230	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C231	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C232	1-123-382-00	ELECT	3.3uF	20%	100V
C233	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C234	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C235	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C236	1-137-367-11	FILM	0.0033uF	5%	50V
C237	1-137-370-11	FILM	0.01uF	5%	50V
C238	1-124-126-00	ELECT	47uF	20%	10V
C239	1-137-372-11	FILM	0.022uF	5%	50V
C240	1-124-927-11	ELECT	4.7uF	20%	100V
C241	1-124-907-11	ELECT	10uF	20%	50V
C243	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C244	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C245	1-124-443-00	ELECT	100uF	20%	10V
C246	1-124-034-51	ELECT	33uF	20%	16V
C247	1-124-034-51	ELECT	33uF	20%	16V
C248	1-124-443-00	ELECT	100uF	20%	10V
C249	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C250	1-124-126-00	ELECT	47uF	20%	10V
C251	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C252	1-124-916-11	ELECT	22uF	20%	63V
C253	1-123-382-00	ELECT	3.3uF	20%	100V
		< CONNECTOR >			
CN201	1-695-938-11	CONNECTOR, BOARD TO BOARD 18P			
CN202	1-695-938-11	CONNECTOR, BOARD TO BOARD 18P			
CN203	1-695-938-11	CONNECTOR, BOARD TO BOARD 18P			
		< DIODE >			
D201	8-719-404-46	DIODE MA110			
D202	8-719-404-46	DIODE MA110			
D203	8-719-400-18	DIODE MA152WK			
D204	8-719-404-46	DIODE MA110			
		< IC >			
IC201	8-759-160-54	IC XLH7772KS-VP			
IC204	8-759-089-84	IC BA7755AF-T1			
		< COIL >			
L201	1-410-071-11	INDUCTOR 10mH			
		< TRANSISTOR >			
⚠Q201	8-729-808-01	TRANSISTOR 2SD1622-S			
⚠Q202	8-729-141-83	TRANSISTOR 2SA473			
Q208	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R201	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R202	1-216-085-00	METAL CHIP	33K	5%	1/10W
R203	1-216-105-00	METAL CHIP	220K	5%	1/10W
R204	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R205	1-216-049-00	METAL CHIP	1K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R206	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R207	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R208	1-216-033-00	METAL CHIP	220	5%	1/10W
R209	1-216-109-00	METAL CHIP	330K	5%	1/10W
R210	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R211	1-216-037-00	METAL CHIP	330	5%	1/10W
R212	1-216-033-00	METAL CHIP	220	5%	1/10W
R213	1-216-083-00	METAL CHIP	27K	5%	1/10W
R215	1-216-045-00	METAL CHIP	680	5%	1/10W
R216	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R217	1-216-095-00	METAL CHIP	82K	5%	1/10W
R218	1-216-097-00	METAL CHIP	100K	5%	1/10W
R219	1-216-097-00	METAL CHIP	100K	5%	1/10W
R220	1-216-097-00	METAL CHIP	100K	5%	1/10W
R221	1-216-097-00	METAL CHIP	100K	5%	1/10W
R223	1-216-097-00	METAL CHIP	100K	5%	1/10W
R227	1-216-085-00	METAL CHIP	33K	5%	1/10W
R228	1-216-295-00	METAL CHIP	0	5%	1/10W
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W
R231	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R232	1-216-085-00	METAL CHIP	33K	5%	1/10W
R234	1-216-077-00	METAL CHIP	15K	5%	1/10W
R235	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R236	1-216-109-00	METAL CHIP	330K	5%	1/10W
R237	1-216-081-00	METAL CHIP	22K	5%	1/10W
R238	1-216-073-00	METAL CHIP	10K	5%	1/10W
R239	1-216-680-11	METAL CHIP	16K	0.5%	1/10W
R240	1-216-085-00	METAL CHIP	33K	5%	1/10W
R241	1-216-105-00	METAL CHIP	220K	5%	1/10W
R243	1-216-081-00	METAL CHIP	22K	5%	1/10W
R244	1-216-085-00	METAL CHIP	33K	5%	1/10W
R245	1-216-081-00	METAL CHIP	22K	5%	1/10W
R246	1-216-085-00	METAL CHIP	33K	5%	1/10W
R247	1-216-081-00	METAL CHIP	22K	5%	1/10W
R248	1-216-085-00	METAL CHIP	33K	5%	1/10W
R249	1-216-081-00	METAL CHIP	22K	5%	1/10W
R250	1-216-085-00	METAL CHIP	33K	5%	1/10W
R251	1-216-081-00	METAL CHIP	22K	5%	1/10W
R252	1-216-081-00	METAL CHIP	22K	5%	1/10W
R253	1-216-081-00	METAL CHIP	22K	5%	1/10W
R254	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R255	1-216-085-00	METAL CHIP	33K	5%	1/10W
R261	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R267	1-216-085-00	METAL CHIP	33K	5%	1/10W
R268	1-216-109-00	METAL CHIP	330K	5%	1/10W
R269	1-216-295-00	METAL CHIP	0	5%	1/10W
R270	1-216-049-00	METAL CHIP	1K	5%	1/10W
R271	1-216-295-00	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description			Remark
R297	1-216-099-00	METAL CHIP	120K	5%	1/10W

< VARIABLE RESISTOR >

RV202	1-241-763-11	RES, ADJ, CERMET 4.7K
RV203	1-241-631-11	RES, ADJ, CARBON 22K
RV204	1-241-764-11	RES, ADJ, CERMET 10K
RV206	1-241-763-11	RES, ADJ, CERMET 4.7K
RV207	1-241-631-11	RES, ADJ, CARBON 22K

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*	A-6756-899-A	MA-144 BOARD, COMPLETE (750HF/751HF)
		************************************
*	A-6756-912-A	MA-144 BOARD, COMPLETE (900HF)
		******************************

	1-558-924-21	CABLE, PIN
*	3-951-893-01	HEAT SINK
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3

< CAPACITOR >

C101	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C102	1-124-126-00	ELECT	47uF	20%	10V
C103	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C104	1-124-916-11	ELECT	22uF	20%	63V
C105	1-124-443-00	ELECT	100uF	20%	10V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C108	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C109	1-124-925-11	ELECT	2.2uF	20%	100V
C110	1-124-477-11	ELECT	47uF	20%	25V
C111	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C112	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C113	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C114	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C115	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C116	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C117	1-124-925-11	ELECT	2.2uF	20%	100V
C118	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C119	1-124-916-11	ELECT	22uF	20%	63V
C131	1-124-477-11	ELECT	47uF	20%	25V
C132	1-124-584-00	ELECT	100uF	20%	10V
C135	1-124-477-11	ELECT	47uF	20%	25V
C136	1-126-101-11	ELECT	100uF	20%	16V
C201	1-162-306-11	CERAMIC	0.01uF	20%	16V
C203	1-126-101-11	ELECT	100uF	20%	16V
C204	1-130-489-00	MYLAR	0.033uF	5%	50V
C205	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C206	1-124-916-11	ELECT	22uF	20%	63V
C207	1-130-487-00	MYLAR	0.022uF	5%	50V
C207	1-137-372-11	FILM	0.022uF	5%	50V

Ref. No.	Part No.	Description			Remark
C208	1-124-925-11	ELECT	2.2uF	20%	100V
C209	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C210	1-124-443-00	ELECT	100uF	20%	10V
C211	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C212	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C213	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C214	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C215	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C306	1-124-126-00	ELECT	47uF	20%	10V
C307	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C308	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C309	1-124-126-00	ELECT	47uF	20%	10V
C310	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C311	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C312	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C313	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C316	1-124-925-11	ELECT	2.2uF	20%	100V
C317	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C318	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C319	1-124-126-00	ELECT	47uF	20%	10V
C320	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C321	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C322	1-124-903-11	ELECT	1uF	20%	50V
C323	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C324	1-124-126-00	ELECT	47uF	20%	10V
C325	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C326	1-124-126-00	ELECT	47uF	20%	10V
C327	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C340	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C601	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C603	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C604	1-124-589-11	ELECT	47uF	20%	16V
C605	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C606	1-162-306-11	CERAMIC	0.01uF	20%	16V
C607	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C609	1-162-306-11	CERAMIC	0.01uF	20%	16V
C610	1-124-589-11	ELECT	47uF	20%	16V
C613	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C614	1-124-589-11	ELECT	47uF	20%	16V
C617	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C618	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C619	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C620	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C621	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C623	1-124-126-00	ELECT	47uF	20%	10V
C629	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C651	1-124-907-11	ELECT	10uF	20%	50V
C652	1-124-907-11	ELECT	10uF	20%	50V
C653	1-124-907-11	ELECT	10uF	20%	50V

Ref. No.	Part No.	Description			Remark
C654	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C702	1-124-126-00	ELECT	47uF	20%	10V
C703	1-124-472-11	ELECT	470uF	20%	10V
C704	1-124-126-00	ELECT	47uF	20%	10V
C714	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C716	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C804	1-124-916-11	ELECT	22uF	20%	63V
C808	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C809	1-126-101-11	ELECT	100uF	20%	16V
C810	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C811	1-124-927-11	ELECT	4.7uF	20%	100V
C812	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C814	1-124-126-00	ELECT	47uF	20%	10V
C817	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C819	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C820	1-124-126-00	ELECT	47uF	20%	10V
C824	1-124-907-11	ELECT	10uF	20%	50V
C825	1-124-907-11	ELECT	10uF	20%	50V
C826	1-124-907-11	ELECT	10uF	20%	50V
C828	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C829	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C830	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C836	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C837	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C852	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C853	1-164-232-11	CERAMIC CHIP (900HF)	0.01uF		50V
C854	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C855	1-163-011-11	CERAMIC CHIP (900HF)	0.0015uF	10%	50V
C856	1-104-696-11	FILM (750HF/751HF)	0.015uF	5%	100V
C856	1-137-612-11	FILM (900HF)	0.0068uF	5%	100V
C857	1-104-697-11	FILM (900HF)	0.047uF	5%	100V
C858	1-104-695-11	FILM	330PF	5%	100V
C859	1-124-477-11	ELECT	47uF	20%	25V
C860	1-124-477-11	ELECT (900HF)	47uF	20%	25V
C861	1-130-491-00	MYLAR	0.047uF	5%	50V
C861	1-137-374-11	FILM	0.047uF	5%	50V
		< CONNECTOR >			
CJ701	1-695-934-11	JACK, PIN 6P (LINE IN 1/LINE OUT)			
CN101	1-506-468-11	PIN, CONNECTOR 3P			
CN103	1-568-786-11	PIN, CONNECTOR 9P			
CN104	1-568-787-11	PIN, CONNECTOR 10P			

Ref. No.	Part No.	Description	Remark
CN201	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN202	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN401	1-691-702-11	CONNECTOR, BOARD TO BOARD 20P	
CN402	1-691-702-11	CONNECTOR, BOARD TO BOARD 20P	
CN403	1-695-519-21	SOCKET, CONNECTOR 5P	
CN601	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
* CN602	1-573-128-11	PIN, CONNECTOR 5P	
CN851	1-695-939-11	CONNECTOR, BOARD TO BOARD 18P	
CN852	1-695-939-11	CONNECTOR, BOARD TO BOARD 18P	
CN853	1-695-939-11	CONNECTOR, BOARD TO BOARD 18P	
* CN854	1-560-892-00	PIN, CONNECTOR 4P	
* CN855	1-560-891-00	PIN, CONNECTOR 3P	
* CN857	1-560-892-00	PIN, CONNECTOR 4P	
		< DIODE >	
⚠D101	8-719-200-76	DIODE 10E1N	
⚠D102	8-719-200-76	DIODE 10E1N	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D201	8-719-108-24	DIODE 1SS223	
D202	8-719-109-74	DIODE RD4.3ES-B1	
D203	8-719-109-81	DIODE RD4.7ES-B2	
D204	8-719-200-82	DIODE 11ES2	
D206	8-719-801-48	DIODE 1SS193	
D301	8-719-200-82	DIODE 11ES2	
D302	8-719-801-48	DIODE 1SS193	
D605	8-719-911-19	DIODE 1SS119	
D706	8-719-109-74	DIODE RD4.3ES-B1	
D801	8-719-110-78	DIODE RD33ES-B2	
D802	8-719-800-76	DIODE 1SS226	
		< DELAY LINE >	
DL602	1-415-668-11	DELAY LINE, ULTRASONIC	
DL602	1-415-668-31	DELAY LINE, ULTRASONIC	
		< IC >	
IC101	8-759-246-14	IC TA8823N	
⚠IC131	8-759-513-73	IC PQ09RF11	
⚠IC132	8-759-513-72	IC PQ12RF11	
⚠IC201	8-759-983-45	IC BA6238A	
IC202	8-759-908-17	IC TL082CPS	
IC203	8-752-838-34	IC CXP80724-060Q	
IC301	8-759-089-80	IC MB90084PF-128	
IC302	8-759-164-09	IC LA7218M	
IC601	1-809-956-11	IC H8B7219B	
IC605	8-759-511-44	IC LVA522SA	
		< JUMPER RESISTOR >	
JR101	1-216-296-00	METAL CHIP 0 5% 1/8W	

Ref. No.	Part No.	Description	Remark
JR102	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR103	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR104	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR105	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR106	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR107	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR108	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR109	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR110	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR111	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR112	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR113	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR114	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR115	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR116	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR117	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR119	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR120	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR121	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR122	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR123	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR124	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR125	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR126	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR127	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR128	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR129	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR130	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR131	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR132	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR133	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR134	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR135	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR136	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR137	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR138	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR139	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR140	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR141	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR142	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR143	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR144	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR145	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR146	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR147	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR148	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR149	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR150	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR151	1-216-295-00	METAL CHIP 0 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
JR152	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR153	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR154	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR155	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR373	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR374	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR375	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR803	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR902	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR903	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR917	1-216-295-00	METAL CHIP 0 5% 1/10W	(750HF/751HF)
JR923	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR932	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR933	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR936	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR938	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR942	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR943	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR945	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR949	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR950	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR951	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR953	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< COIL >	
L101	1-414-189-31	INDUCTOR 100uH	
L102	1-410-521-11	INDUCTOR 100uH	
L103	1-410-519-11	INDUCTOR 68uH	
L201	1-410-513-11	INDUCTOR 22uH	
L202	1-414-183-41	INDUCTOR 10uH	
L301	1-414-189-31	INDUCTOR 100uH	
L303	1-408-413-00	INDUCTOR 22uH	
L304	1-410-521-11	INDUCTOR 100uH	
L601	1-414-189-31	INDUCTOR 100uH	
L602	1-408-424-00	INDUCTOR 180uH	
L603	1-414-189-31	INDUCTOR 100uH	
L607	1-414-189-31	INDUCTOR 100uH	
L609	1-408-422-00	INDUCTOR 120uH	
L610	1-414-189-31	INDUCTOR 100uH	
L701	1-414-189-31	INDUCTOR 100uH	
L707	1-408-401-00	INDUCTOR 2.2uH	
L708	1-408-401-00	INDUCTOR 2.2uH	
L801	1-414-189-31	INDUCTOR 100uH	
L802	1-414-183-41	INDUCTOR 10uH	
L804	1-414-183-41	INDUCTOR 10uH	
L852	1-410-687-11	INDUCTOR 1.2mH	
L853	1-410-687-11	INDUCTOR 1.2mH	(900HF)

Ref. No.	Part No.	Description	Remark
		< IC LINK >	
PS801	1-532-679-00	LINK, IC	
PS851	1-532-679-00	LINK, IC	
		< TRANSISTOR >	
Q101	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q102	8-729-421-19	TRANSISTOR UN2213	
Q103	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q105	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q107	8-729-422-36	TRANSISTOR 2SB709A-Q	
Q201	8-729-424-56	TRANSISTOR UN211L	
Q303	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q304	8-729-422-36	TRANSISTOR 2SB709A-Q	
Q306	8-729-424-18	TRANSISTOR UN2113	
Q602	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q604	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q606	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q608	8-729-424-56	TRANSISTOR UN211L	
Q609	8-729-421-19	TRANSISTOR UN2213	
Q613	8-729-421-19	TRANSISTOR UN2213	
Q615	8-729-424-18	TRANSISTOR UN2113	
Q616	8-729-421-19	TRANSISTOR UN2213	
Q701	8-729-422-36	TRANSISTOR 2SB709A-Q	
Q801	8-729-173-38	TRANSISTOR 2SA733-K	
Q802	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q803	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q804	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q851	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q852	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	(900HF)
Q853	8-729-421-19	TRANSISTOR UN2213	
Q854	8-729-424-08	TRANSISTOR UN2111	
Q855	8-729-424-18	TRANSISTOR UN2113	(900HF)
		< RESISTOR >	
R101	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R102	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R103	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R104	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R106	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R107	1-216-037-00	METAL CHIP 330 5% 1/10W	
R108	1-216-025-00	METAL CHIP 100 5% 1/10W	
R109	1-216-659-11	METAL CHIP 2.2K 0.5% 1/10W	
R110	1-216-651-11	METAL CHIP 1K 0.5% 1/10W	
R111	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R112	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R113	1-216-041-00	METAL CHIP 470 5% 1/10W	
R114	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	

Ref.No.	Part No.	Description				Remark
R115	1-216-035-00	METAL CHIP	270	5%	1/10W	
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R117	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R119	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R120	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R121	1-216-041-00	METAL CHIP	470	5%	1/10W	
R122	1-216-033-00	METAL CHIP	220	5%	1/10W	
R123	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R124	1-249-429-11	CARBON	10K	5%	1/4W	
R126	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W	
R131	1-249-417-11	CARBON	1K	5%	1/4W	F
R201	1-216-295-00	METAL CHIP	0	5%	1/10W	
R202	1-216-295-00	METAL CHIP	0	5%	1/10W	
R203	1-249-429-11	CARBON	10K	5%	1/4W	
R204	1-249-429-11	CARBON	10K	5%	1/4W	
R205	1-249-429-11	CARBON	10K	5%	1/4W	
R206	1-249-436-11	CARBON	39K	5%	1/4W	
R207	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R208	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R209	1-215-463-00	METAL	56K	1%	1/6W	
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R211	1-216-660-11	METAL CHIP	2.4K	0.5%	1/10W	
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R213	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R214	1-247-885-00	CARBON	180K	5%	1/4W	
R215	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R216	1-216-198-00	METAL CHIP	1K	5%	1/8W	
R217	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R218	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R219	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R220	1-249-431-11	CARBON	15K	5%	1/4W	
R222	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R223	1-249-429-11	CARBON	10K	5%	1/4W	
R224	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R225	1-249-437-11	CARBON	47K	5%	1/4W	
R226	1-249-437-11	CARBON	47K	5%	1/4W	
R227	1-249-429-11	CARBON	10K	5%	1/4W	
R230	1-249-429-11	CARBON	10K	5%	1/4W	
R303	1-216-033-00	METAL CHIP	220	5%	1/10W	
R304	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R305	1-216-295-00	METAL CHIP	0	5%	1/10W	
R306	1-216-295-00	METAL CHIP	0	5%	1/10W	
R307	1-216-043-00	METAL CHIP	560	5%	1/10W	
R308	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R309	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R310	1-216-043-00	METAL CHIP	560	5%	1/10W	
R311	1-249-429-11	CARBON	10K	5%	1/4W	
R312	1-216-077-00	METAL CHIP	15K	5%	1/10W	

Ref.No.	Part No.	Description				Remark
R313	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R314	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R315	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R316	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R601	1-216-041-00	METAL CHIP	470	5%	1/10W	
R602	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R603	1-249-417-11	CARBON	1K	5%	1/4W	F
R604	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R605	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R606	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R607	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W	
R608	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R609	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R614	1-216-035-00	METAL CHIP	270	5%	1/10W	
R615	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R616	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R617	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R618	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R620	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R621	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R627	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R628	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R629	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R701	1-249-408-11	CARBON	180	5%	1/4W	F
R702	1-249-407-11	CARBON	150	5%	1/4W	F
R703	1-216-021-00	METAL CHIP	68	5%	1/10W	
R704	1-216-022-00	METAL CHIP	75	5%	1/10W	
R708	1-216-295-00	METAL CHIP	0	5%	1/10W	
R709	1-216-295-00	METAL CHIP	0	5%	1/10W	
R710	1-249-414-11	CARBON	560	5%	1/4W	F
R711	1-249-414-11	CARBON	560	5%	1/4W	F
R714	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R715	1-216-037-00	METAL CHIP	330	5%	1/10W	
R804	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R805	1-249-405-11	CARBON	100	5%	1/4W	F
R806	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R807	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R808	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R810	1-216-025-00	METAL CHIP	100	5%	1/10W	
R811	1-216-037-00	METAL CHIP	330	5%	1/10W	
R812	1-216-037-00	METAL CHIP	330	5%	1/10W	
R813	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R816	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R817	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R823	1-249-417-11	CARBON	1K	5%	1/4W	F
R824	1-249-417-11	CARBON	1K	5%	1/4W	F
R825	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R826	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	

Ref. No.	Part No.	Description			Remark
R827	1-249-421-11	CARBON	2.2K	5%	1/4W F
R828	1-216-093-00	METAL CHIP	68K	5%	1/10W
R835	1-249-417-11	CARBON	1K	5%	1/4W F
R836	1-216-049-00	METAL CHIP	1K	5%	1/10W
R837	1-216-049-00	METAL CHIP	1K	5%	1/10W
R838	1-216-296-00	METAL CHIP	0	5%	1/8W
R852	1-216-083-00	METAL CHIP	27K	5%	1/10W
R853	1-216-083-00	METAL CHIP	27K	5%	1/10W
R854	1-216-669-11	METAL CHIP	5.6K	0.5%	1/10W
R855	1-216-653-11	METAL CHIP	1.2K	0.5%	1/10W
R859	1-216-295-00	METAL CHIP	0	5%	1/10W
R866	1-216-001-00	METAL CHIP	10	5%	1/10W
R868	1-216-081-00	METAL CHIP	22K	5%	1/10W
⚠R869	1-249-389-11	CARBON (750HF/751HF)	4.7	5%	1/4W F
⚠R869	1-249-395-11	CARBON	15	5%	1/4W F (900HF)
R870	1-216-083-00	METAL CHIP	27K	5%	1/10W (900HF)
⚠R871	1-249-394-11	CARBON	12	5%	1/6W F (900HF)
R872	1-216-295-00	METAL CHIP	0	5%	1/10W
R898	1-216-049-00	METAL CHIP	1K	5%	1/10W
R899	1-216-049-00	METAL CHIP	1K	5%	1/10W

< RF MODULATOR >

⚠RF701	1-466-150-11	MODULATOR, RF (RFU-1025)

< VARIABLE RESISTOR >

RV201	1-238-019-11	RES, ADJ, CARBON 47K
RV202	1-238-019-11	RES, ADJ, CARBON 47K
RV851	1-238-020-11	RES, ADJ, CARBON 100K

< TRANSFORMER >

T851	1-423-414-11	TRANSFORMER, BIAS OSCILLATION (750HF/751HF)
T851	1-423-413-11	TRANSFORMER, BIAS OSCILLATION (900HF)
T852	1-423-415-11	TRANSFORMER, BIAS OSCILLATION (900HF)

< TUNER >

⚠TU802	8-598-039-00	TUNER BTF-WA401

< VIBRATOR >

X201	1-578-774-11	VIBRATOR, CRYSTAL (12MHz)
X301	1-577-381-11	VIBRATOR, CRYSTAL (17.7MHz)
X302	1-577-165-11	VIBLATOR, CERAMIC (500KHz)

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Ref. No.	Part No.	Description	Remark
*	A-6754-462-A	MD-56 BOARD, COMPLETE **********************	

< CAPACITOR >

C001	1-161-494-00	CERAMIC	0.022uF		25V
C002	1-161-494-00	CERAMIC	0.022uF		25V
C003	1-126-157-11	ELECT	10uF	20%	16V
C004	1-161-379-00	CERAMIC	0.01uF	20%	25V
C006	1-124-589-11	ELECT	47uF	20%	16V
C008	1-164-159-11	CERAMIC	0.1uF		50V
C009	1-164-159-11	CERAMIC	0.1uF		50V
C022	1-161-379-00	CERAMIC	0.01uF	20%	25V
C025	1-162-294-31	CERAMIC	0.001uF	10%	50V
C026	1-162-294-31	CERAMIC	0.001uF	10%	50V

< CONNECTOR >

CN002	1-569-335-11	CONNECTOR, BOARD TO BOARD 9P
CN003	1-691-643-11	CONNECTOR, BOARD TO BOARD
CN004	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P
CN005	1-506-482-11	PIN, CONNECTOR 3P
CN006	1-569-333-11	CONNECTOR, BOARD TO BOARD 3P
CN007	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P
CN009	1-506-484-11	PIN, CONNECTOR 5P

< DIODE >

D001	8-719-985-00	DIODE GL451VS1
D004	8-719-109-93	DIODE RD6.2ES-B2
D005	8-719-109-93	DIODE RD6.2ES-B2
D006	8-719-109-93	DIODE RD6.2ES-B2
D007	8-719-109-93	DIODE RD6.2ES-B2

< IC >

IC002	8-759-912-77	IC uPC324C

< PHOTO INTERRUPTER >

PH001	8-759-144-33	IC PS6002
PH002	8-759-144-33	IC PS6002

< TRANSISTOR >

Q001	8-729-926-31	TRANSISTOR PT483F1S
Q002	8-729-926-31	TRANSISTOR PT483F1S

< RESISTOR >

R001	1-249-423-11	CARBON	3.3K	5%	1/4W F
R002	1-249-423-11	CARBON	3.3K	5%	1/4W F
R003	1-249-426-11	CARBON	5.6K	5%	1/4W
R004	1-249-426-11	CARBON	5.6K	5%	1/4W
R005	1-249-417-11	CARBON	1K	5%	1/4W F

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
R006	1-249-441-11	CARBON	100K	5%	1/4W	
R007	1-249-441-11	CARBON	100K	5%	1/4W	
R008	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R009	1-249-408-11	CARBON	180	5%	1/4W	F
R010	1-249-422-11	CARBON	2.7K	5%	1/4W	F
R011	1-249-437-11	CARBON	47K	5%	1/4W	
R012	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R015	1-249-437-11	CARBON	47K	5%	1/4W	
R016	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R017	1-249-429-11	CARBON	10K	5%	1/4W	
R018	1-249-429-11	CARBON	10K	5%	1/4W	
R019	1-249-429-11	CARBON	10K	5%	1/4W	
R020	1-249-429-11	CARBON	10K	5%	1/4W	
R023	1-249-414-11	CARBON	560	5%	1/4W	F
		< SWITCH >				
S001	1-570-953-11	SWITCH, PUSH (1 KEY)(C-U/D)				
S002	1-570-953-11	SWITCH, PUSH (1 KEY)(REC PRF)				
**						
*	A-6754-461-A	MF-171 BOARD, COMPLETE (750HF/751HF)				
		************************************				
*	A-6754-479-A	MF-171 BOARD, COMPLETE (900HF)				
		******************************				
		< CONNECTOR >				
* CN201	1-691-407-11	CONNECTOR, BOARD TO BOARD 10P				
		< DIODE >				
D201	8-719-940-82	LED SLR34MC3				
D202	8-719-940-82	LED SLR34MC3				
D205	8-719-109-93	DIODE RD6.2ES-B2				
		< IC >				
IC201	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON				
		< JACK >				
PJ201	1-580-845-11	JACK, PIN 3P (LINE IN 2)				
		< TRANSISTOR >				
Q201	8-729-421-19	TRANSISTOR UN2213				
		< RESISTOR >				
R201	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R202	1-216-022-00	METAL CHIP	75	5%	1/10W	
R203	1-216-295-00	METAL CHIP	0	5%	1/10W	
R204	1-216-295-00	METAL CHIP	0	5%	1/10W	
R205	1-216-021-00	METAL CHIP	68	5%	1/10W	
R207	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
		< SWITCH >				
S201	1-571-977-11	SWITCH, TACTIL (POWER ON/OFF)				
S202	1-571-977-11	SWITCH, TACTIL (EJECT)				
**						
*	A-6756-900-A	MF-172 BOARD, COMPLETE (750HF:US/751HF:US)				
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*	A-6756-911-A	MF-172 BOARD, COMPLETE (750HF:CND/751HF:CND)				
		**********************				
*	A-6756-913-A	MF-172 BOARD, COMPLETE (900HF:US, MX, CHL, PX)				
		**********************				
*	A-6756-909-A	MF-172 BOARD, COMPLETE (900HF:CND)				
		**********************************				
		< BUZZER >				
BZ101	1-529-104-11	BUZZER, PIEZOELECTRIC				
		< CAPACITOR >				
C101	1-128-057-11	ELECT	330uF	20%	6.3V	
C102	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C103	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V	
C104	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C105	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C106	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C107	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C108	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C109	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C110	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C111	1-124-261-00	ELECT	10uF	20%	50V	
C112	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C113	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C114	1-161-329-00	CERAMIC	0.0068uF	20%	16V	
		< CONNECTOR >				
CN101	1-568-079-11	CONNECTOR (RECEPTALE) 20P				
CN102	1-568-079-11	CONNECTOR (RECEPTALE) 20P				
CN103	1-695-947-11	CONNECTOR, BOARD TO BOARD 10P				
CN104	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P				
		< TRIMMER >				
CT101	1-141-291-11	CAP, TRIMMER				
		< DIODE >				
D101	8-719-911-19	DIODE 1SS119				
D102	8-719-911-19	DIODE 1SS119				
D104	8-719-110-08	DIODE RD8.2ES-B2				
D107	8-719-200-82	DIODE 11ES2				

Ref. No.	Part No.	Description			Remark
		< FILTER >			
FL101	1-519-745-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC101	8-759-089-75	IC MB89095-110			
IC102	8-759-502-00	IC ST93CS56B1			
IC103	8-759-520-98	IC PST572K			
IC104	8-759-510-43	IC PST572C			
		< JUMPER RESISTOR >			
JR101	1-216-296-00	METAL CHIP	0	5%	1/8W
JR104	1-216-295-00	METAL CHIP	0	5%	1/10W
JR111	1-216-295-00	METAL CHIP	0	5%	1/10W
		< COIL >			
L101	1-410-509-11	INDUCTOR 10uH			
		< RESISTOR >			
R101	1-216-073-00	METAL CHIP	10K	5%	1/10W
R102	1-216-073-00	METAL CHIP	10K	5%	1/10W
R103	1-216-073-00	METAL CHIP	10K	5%	1/10W
R104	1-216-073-00	METAL CHIP	10K	5%	1/10W
R105	1-216-295-00	METAL CHIP	0	5%	1/10W
		(750HF:US/751HF:US)			
R105	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		(750HF:CND/751HF:CND)			
R105	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
		(900HF:US, MX, CHL, PX)			
R105	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
		(900HF:CND)			
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-033-00	METAL CHIP	220	5%	1/10W
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R115	1-216-113-00	METAL CHIP	470K	5%	1/10W
R116	1-216-095-00	METAL CHIP	82K	5%	1/10W
R117	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W
R119	1-216-198-00	METAL CHIP	1K	5%	1/8W
R120	1-216-049-00	METAL CHIP	1K	5%	1/10W
R121	1-216-049-00	METAL CHIP	1K	5%	1/10W
R122	1-216-049-00	METAL CHIP	1K	5%	1/10W
R123	1-216-295-00	METAL CHIP	0	5%	1/10W
R126	1-216-041-00	METAL CHIP	470	5%	1/10W
R127	1-216-041-00	METAL CHIP	470	5%	1/10W
R130	1-216-198-00	METAL CHIP	1K	5%	1/8W
R131	1-216-049-00	METAL CHIP	1K	5%	1/10W
R132	1-216-049-00	METAL CHIP	1K	5%	1/10W
R133	1-216-049-00	METAL CHIP	1K	5%	1/10W
R134	1-249-417-11	CARBON	1K	5%	1/4W F
R135	1-249-417-11	CARBON	1K	5%	1/4W F
R136	1-216-041-00	METAL CHIP	470	5%	1/10W
		< VIBRATOR >			
X101	1-567-098-00	OSCILLATOR, CRYSTAL (32.768KHz)			
X102	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
***					
*	A-6756-901-A	MF-173 BOARD, COMPLETE (750HF/751HF)			
		************************************			
*	A-6756-914-A	MF-173 BOARD, COMPLETE (900HF)			
		*****************************			
		< CAPACITOR >			
C001	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN001	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P			
CN002	1-580-850-11	CONNECTOR (DMS) 8P			
		< DIODE >			
D001	8-719-940-99	LED SLR34VC3 (STEREO)			
D002	8-719-940-99	LED SLR34VC3 (TIMER REC)			
D003	8-719-940-99	LED SLR34VC3 (REC)			
D004	8-719-812-32	LED TLY123 (FF)			
D005	8-719-940-82	LED SLR34MC3 (FORWARD)			
D006	8-719-946-30	LED SLR34DC3 (PAUSE)			
D007	8-719-940-82	LED SLR34MC3 (REVERSE)			
D008	8-719-812-32	LED TLY123 (REW)			
D009	8-719-812-32	LED TLY123 (HI-SPEED REWIND)			
D010	8-719-940-99	LED SLR34VC3 (INSERT:AUDIO) (900HF)			
D011	8-719-940-99	LED SLR34VC3 (INSERT:VIDEO) (900HF)			
D012	8-719-946-30	LED SLR34DC3 (APC)			
		< JUMPER RESISTOR >			
JR031	1-216-296-00	METAL CHIP	0	5%	1/8W
JR032	1-216-296-00	METAL CHIP	0	5%	1/8W
JR033	1-216-296-00	METAL CHIP	0	5%	1/8W
JR034	1-216-296-00	METAL CHIP	0	5%	1/8W
JR035	1-216-295-00	METAL CHIP	0	5%	1/10W
JR036	1-216-296-00	METAL CHIP	0	5%	1/8W
JR037	1-216-295-00	METAL CHIP	0	5%	1/10W
JR038	1-216-296-00	METAL CHIP	0	5%	1/8W

MF-173 POWER BLOCK

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q001	8-729-421-19	TRANSISTOR UN2213	
Q002	8-729-421-19	TRANSISTOR UN2213	
Q003	8-729-421-19	TRANSISTOR UN2213	
Q004	8-729-421-19	TRANSISTOR UN2213	
Q005	8-729-421-19	TRANSISTOR UN2213	
Q006	8-729-421-19	TRANSISTOR UN2213	
Q007	8-729-421-19	TRANSISTOR UN2213 (900HF)	
Q008	8-729-421-19	TRANSISTOR UN2213 (900HF)	
Q009	8-729-421-19	TRANSISTOR UN2213	
		< RESISTOR >	
R001	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R002	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R003	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R004	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R005	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R006	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R007	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R008	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R009	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R010	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R011	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R012	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R013	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R014	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R015	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R016	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R023	1-216-037-00	METAL CHIP 330 5% 1/10W	
R024	1-216-035-00	METAL CHIP 270 5% 1/10W	
R025	1-216-035-00	METAL CHIP 270 5% 1/10W	
R026	1-216-031-00	METAL CHIP 180 5% 1/10W	
R027	1-216-031-00	METAL CHIP 180 5% 1/10W	
R028	1-216-037-00	METAL CHIP 330 5% 1/10W	
R029	1-216-031-00	METAL CHIP 180 5% 1/10W	
R030	1-216-031-00	METAL CHIP 180 5% 1/10W	
R031	1-216-031-00	METAL CHIP 180 5% 1/10W	
R032	1-216-037-00	METAL CHIP 330 5% 1/10W (900HF)	
R033	1-216-037-00	METAL CHIP 330 5% 1/10W (900HF)	
R034	1-216-035-00	METAL CHIP 270 5% 1/10W	
R035	1-216-075-00	METAL CHIP 12K 5% 1/10W	
		< SWITCH >	
S001	1-571-977-11	SWITCH, TACTIL (REC)	
S002	1-571-977-11	SWITCH, TACTIL (INPUT SELECT)	
S003	1-571-977-11	SWITCH, TACTIL (CHANNEL +)	
S004	1-571-977-11	SWITCH, TACTIL (CHANNEL -)	
S005	1-571-977-11	SWITCH, TACTIL (TV/VTR)	
S006	1-571-977-11	SWITCH, TACTIL (PAUSE)	
S007	1-571-977-11	SWITCH, TACTIL (HI-SPEED REWIND)	
S008	1-571-977-11	SWITCH, TACTIL (TIMER REC ON/OFF)	
S009	1-572-907-11	SWITCH, SLIDE (PICTURE)	
S012	1-571-977-11	SWITCH, TACTIL (APC)	
S901	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	
**********	************	******************************	********
⚠	1-413-788-11	POWER BLOCK (750HF/751HF)	
		*************************	
		< CAPACITOR >	
⚠C101	9-900-521-01	METAL FILM 0.1uF 125V	
⚠C102	9-900-521-01	METAL FILM 0.1uF 125V	
⚠C103	9-903-930-01	CERAMIC 470PF 125V	
⚠C104	9-903-930-01	CERAMIC 470PF 125V	
⚠C105	9-900-522-01	CERAMIC 2200PF 125V	
⚠C106	9-903-931-01	ELECT 150uF 200V	
C107	1-124-906-01	ELECT 4.7uF 50V	
C108	9-902-055-01	CERAMIC 100PF 1KV	
C109	9-900-525-01	METAL FILM 0.047uF 400V	
C110	1-130-491-00	ELECT 0.047uF 50V	
C111	1-130-491-00	ELECT 0.047uF 50V	
C201	1-126-964-11	ELECT 10uF 50V	
C202	1-126-768-11	ELECT 2200uF 16V	
C203	1-126-933-11	ELECT 100uF 16V	
C204	1-126-927-11	ELECT 2200uF 10V	
C205	1-126-925-11	ELECT 470uF 10V	
C206	1-126-968-11	ELECT 100uF 50V	
C207	1-126-916-11	ELECT 1000uF 6.3V	
C208	1-126-960-11	ELECT 1uF 50V	
C209	1-130-483-00	ELECT 0.01uF 50V	
C210	1-130-483-00	ELECT 0.01uF 50V	
		< CONNECTOR >	
CN1	1-568-787-11	CONNECTOR 10P	
CN2	1-568-786-21	CONNECTOR 9P	
⚠CN101	9-903-934-01	CONNECTOR 2P	
		< DIODE >	
⚠D101	9-900-511-01	BRIDGE DIODE S1WBA60	
⚠D102	9-900-512-01	DIODE AG01A	
⚠D103	8-719-920-32	DIODE ERA15-02	
⚠D104	9-902-757-01	ZENER DIODE MA4030	
⚠D105	9-900-514-01	DIODE MA165	
⚠D106	9-902-050-01	DIODE ERA15-06	
⚠D201	9-900-535-01	DIODE AU02Z	
⚠D202	9-902-061-01	DIODE RG4Z	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
⚠D203	8-719-920-32	DIODE ERA15-02			
⚠D204	9-902-062-01	DIODE ERB81-004			
⚠D206	9-900-535-01	DIODE AU02Z			
⚠D207	9-902-064-01	DIODE ERA81-004			
⚠D208	9-903-932-01	ZENER DIODE MA2150			
		< FUSE >			
⚠F101	1-533-296-11	FUSE (125V 2A)			
		< FERRITE BEAD >			
⚠FB1	9-903-929-01	BEADS CORE			
		< IC >			
⚠IC201	9-900-532-01	IC AN1431T			
		< COIL >			
⚠L101	9-900-520-01	LINE FILTER	0.5A	39mH	
L202	9-902-762-01	CHOKE COIL	20uH		
L203	9-902-762-01	CHOKE COIL	20uH		
		< PHOTO COUPLER >			
⚠PC101	9-900-519-01	PHOTO COUPLER ON3131			
		< IC LINK >			
⚠PS201	1-532-637-00	IC LINK			
		< TRANSISTOR >			
⚠Q101	9-902-096-01	TRANSISTOR 2SC4054			
⚠Q102	9-900-517-01	TRANSISTOR 2SC3377			
		< RESISTOR >			
⚠R101	1-202-917-00	SOLID	6.8M	1/2W	
R102	1-247-879-00	CARBON	100K	1/4W	
R103	1-247-879-00	CARBON	100K	1/4W	
R104	1-247-855-00	CARBON	10K	1/4W	
R106	9-902-057-01	METAL OXIDE	47K	3W	
R107	1-247-736-11	CARBON	56	1/2W	F
R108	1-247-736-11	CARBON	56	1/2W	F
R109	1-247-826-00	CARBON (FOR ADJUSTMENT)	(620)	1/4W	
⚠R201	1-247-727-11	CARBON	10	1/2W	F
⚠R202	1-247-727-11	CARBON	10	1/2W	F
⚠R203	1-212-857-00	FUSE	10	1/4W	F
⚠R204	9-902-074-01	FUSE	0.47	1/4W	F
R205	1-244-841-11	CARBON	47	1/2W	
R206	1-215-428-00	METAL	2K	1/4W	
R207		CARBON (FOR ADJUSTMENT)			
R208	1-215-425-00	METAL (FOR ADJUSTMENT)	(1.5K)	1/4W	
		< TRANSFORMER >			
⚠T101	9-903-928-01	SWITCHNG TRANSFORMER			
		< VARIABLE RESISTOR >			
VR201	9-902-761-01	RES, ADJ, METAL			

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⚠ 1-413-792-11 POWER BLOCK (900HF:US,CND,MX)

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Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
⚠C101	9-900-521-01	FILM	0.1uF		
⚠C102	9-900-521-01	FILM	0.1uF		
⚠C103	9-904-227-01	CERAMIC	1000PF		
⚠C104	9-904-227-01	CERAMIC	1000PF		
⚠C105	9-904-228-01	CERAMIC	470PF		
⚠C106	9-904-229-01	ELECT	180uF		200V
C107	9-900-525-01	FILM	0.047uF		400V
C108	9-904-226-01	CERAMIC	330PF		2KV
C109	1-130-495-00	FILM	0.1uF		50V
C110	9-904-230-01	ELECT	1uF		100V
C111	1-130-495-00	FILM	0.1uF		50V
C112	1-130-491-00	FILM	0.047uF		50V
⚠C115	9-904-228-01	CERAMIC	470PF		
C201	1-124-122-11	ELECT	100uF		50V
C202	1-124-445-11	ELECT	100uF		16V
C203	9-900-382-01	CERAMIC	1000PF		1KV
C204	1-126-934-11	ELECT	220uF		16V
C205	9-903-982-01	ELECT	1500uF		10V
C207	9-903-910-01	ELECT	2700uF		16V
C209	1-124-903-11	ELECT	1uF		50V
C210	1-124-472-11	ELECT	470uF		10V
C212	1-124-122-11	ELECT	100uF		50V
C213	9-903-983-01	ELECT	1200uF		6.3V
C214	1-130-483-00	FILM	0.01uF		50V
C215	1-130-483-00	FILM	0.01uF		50V
C216	1-130-495-00	FILM	0.1uF		50V
		< CONNECTOR >			
CN201	1-568-787-11	CONNECTOR			
CN202	1-568-786-21	CONNECTOR			
⚠CN101	9-902-089-01	INLET			

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POWER BLOCK

Ref. No.	Part No.	Description			Remark
		< DIODE >			
⚠D101	9-900-511-01	BRIDGE DIODE S1WBA60			
⚠D102	9-900-513-01	DIODE EG01C			
⚠D103	9-900-369-01	DIODE AC01Z			
⚠D104	9-900-513-01	DIODE EG01C			
⚠D105	9-904-222-01	ZENER DIODE RD2.4ES			
⚠D106	9-903-904-01	DIODE 1SS270A			
⚠D201	9-900-369-01	DIODE AC01Z			
⚠D202	9-904-224-01	ZENER DIODE RD39FB			
⚠D203	9-903-969-01	DIODE RK49			
⚠D204	9-902-768-01	DIODE RL4Z			
⚠D205	9-900-369-01	DIODE AC01Z			
⚠D206	9-903-975-01	DIODE RL2Z			
⚠D208	9-903-975-01	DIODE RL2Z			
⚠D209	9-903-970-01	ZENER DIODE RD3.6ES			
		< FUSE >			
⚠F101	1-532-743-11	FUSE (125V 2A)			
		< IC >			
⚠IC201	9-900-533-01	IC HA17431P			
⚠IC202	8-759-400-28	IC AN79L24			
		< COIL >			
⚠L101	9-904-216-01	COMMON MODE	0.4A	22mH	
⚠L102	9-903-995-01	BEADS CORE			
⚠L201	9-903-993-01	CHOKE COIL	1.3A	39uH	
⚠L202	9-903-997-01	BEADS CORE			
⚠L203	9-903-993-01	CHOKE COIL	1.3A	39uH	
⚠L204	9-904-218-01	BEADS CORE			
		< PHOTO COUPLER >			
⚠PC101	8-719-902-56	PHOTO COUPLER PC817			
		< IC LINK >			
⚠PS201	1-532-637-11	IC LINK			
		< TRANSISTOR >			
⚠Q101	9-902-076-01	TRANSISTOR 2SC4054			
⚠Q102	9-900-517-01	TRANSISTOR 2SC3377			
⚠Q103	9-900-517-01	TRANSISTOR 2SC3377			
		< RESISTOR >			
⚠R101	9-902-056-01	SOLID	6.8M	1/2W	
R102	1-215-927-00	METAL OXIDE	47K	3W	
R103	1-246-521-00	CARBON	100K	1/4W	
R104	1-246-521-00	CARBON	100K	1/4W	
R106	1-246-521-00	CARBON	100K	1/4W	
R107	9-904-231-00	METAL OXIDE	68	1W	
R108	9-904-232-01	METAL	360	1/4W	
R109	1-246-433-00	CARBON	390	1/4W	
R110	1-246-821-00	CARBON	390	1/4W	
⚠R201	9-902-073-01	RESISTOR, FUSE	10	1/4W	
R203	9-903-987-01	RESISTOR, FUSE	0.1	1/6W	
R205	1-246-471-00	CARBON	820	1/4W	
R207	1-246-471-00	CARBON	820	1/4W	
⚠R210	1-247-735-00	CARBON	47	1/2W	F
		< VARIABLE RESISTOR >			
RV201	9-903-912-01	RES, ADJ, CARBON 500 1/3W			
		< TRANSFORMER >			
⚠T101	9-904-215-01	TRANSFORMER			

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⚠ 1-413-793-11 POWER BLOCK (900HF:CHL,PX)

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Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
⚠C101	9-902-933-01	FILM	0.22uF	250V	
⚠C102	9-902-934-01	FILM	0.1uF	250V	
⚠C103	9-903-976-01	CERAMIC	2200PF	400V	
⚠C104	9-903-976-01	CERAMIC	2200PF	400V	
C106	9-903-980-01	ELECT	220uF	400V	
C107	9-903-974-01	FILM	0.047uF	630V	
C108	9-903-977-01	CERAMIC	100PF	2KV	
C109	1-130-491-51	FILM	1000PF	50V	
C110	9-903-981-01	ELECT	1uF	200V	
C111	1-130-483-51	FILM	0.01uF	50V	
⚠C113	9-903-978-01	CERAMIC	3300PF	400V	
⚠C115	9-903-979-01	CERAMIC	2200PF	400V	
⚠C116	9-903-979-01	CERAMIC	2200PF	400V	
C201	1-124-122-51	ELECT	100uF	50V	
C202	1-124-445-51	ELECT	100uF	16V	
C203	9-900-382-01	CERAMIC	1000PF	1KV	
C204	1-126-934-51	ELECT	220uF	16V	
C205	9-903-982-01	ELECT	1500uF	10V	
C207	9-903-910-01	ELECT	2700uF	16V	
C209	1-124-903-51	ELECT	1uF	50V	
C210	1-124-472-51	ELECT	470uF	10V	
C212	1-124-122-51	ELECT	100uF	50V	
C213	9-903-983-01	ELECT	1200uF	6.3V	
C214	1-130-483-51	FILM	0.01uF	50V	
C215	1-130-483-51	FILM	0.01uF	50V	
C216	1-130-495-51	FILM	0.1uF	50V	

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Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
⚠CN101	1-562-985-11	INLET	
CN201	1-568-787-11	CONNECTOR 10P	
CN202	1-568-786-21	CONNECTOR 9P	
		< DIODE >	
⚠D101	9-900-511-01	RECTIFIER DIODE S1WBA60	
⚠D102	9-900-513-01	DIODE EG1C	
D103	9-903-904-01	DIODE 1SS270A	
⚠D104	9-900-513-01	DIODE EG1C	
D105	9-903-970-01	ZENER DIODE RD3.6ESB	
D106	9-903-904-01	DIODE 1SS270A	
D201	9-903-967-01	DIODE AG01	
D202	9-903-972-01	ZENER DIODE RD36FB	
D203	9-903-969-01	DIODE RK49	
⚠D204	9-902-768-01	DIODE RL4Z	
⚠D205	9-900-369-01	DIODE AG01Z	
⚠D206	9-900-369-01	DIODE AG01Z	
⚠D208	9-903-975-01	DIODE RL2Z	
D209	9-903-970-01	ZENER DIODE RD3.6ESB	
		< FUSE >	
⚠F101	1-532-388-51	FUSE (250V 2A)	
		< HYBRID IC >	
⚠HIC101	9-903-964-01	HYBRID IC HB100	
		< IC >	
⚠IC201	9-900-533-01	IC HA17431P	
⚠IC202	8-759-400-28	IC AN79L24	
		< COIL >	
⚠L101	9-903-991-01	COMMON MODE	
⚠L102	9-903-995-01	BEADS CORE	
⚠L201	9-903-993-01	CHOKE COIL	
⚠L202	9-903-997-01	BEADS CORE	
⚠L203	9-903-993-01	CHOKE COIL	
		< PHOTO COUPLER >	
⚠PC101	9-903-966-01	COUPLER, PHOTO PS2561	
		< TRANSISTOR >	
⚠Q101	9-903-962-01	TRANSISTOR 2SK2056	
		< RESISTOR >	
R100	9-903-988-01	METAL FILM 2.7M	1/2W
⚠R101	9-903-984-01	WIRE WOUND 2.2	3W

Ref. No.	Part No.	Description	Remark
⚠R102	9-903-985-01	METAL OXIDE FILM 100K	3W
R103	1-246-531-25	CARBON 270K	1/4W
R104	1-246-531-25	CARBON 270K	1/4W
⚠R105	9-903-985-01	METAL OXIDE FILM 100K	3W
R106	1-246-521-25	CARBON 100K	1/4W
R107	9-903-989-01	METAL FILM 220	1W
⚠R108	9-903-986-01	METAL FILM 0.15	2W
R109	1-246-433-25	CARBON 22	1/4W
⚠R110	1-247-753-51	METAL FILM 1.2K	1/2W
R111	1-246-477-25	CARBON 1.5K	1/4W
⚠R201	9-902-073-01	FUSE 10	1/4W
⚠R203	9-903-987-01	FUSE 0.1	1/6W
R205	1-246-471-25	CARBON 1K	1/4W
R207	1-246-471-25	CARBON 1K	1/4W
⚠R210	1-247-735-51	CARBON 47	1/2W F
R213	1-246-473-25	CARBON 1K	1/4W
		< VARIABLE RESISTOR >	
RV201	9-903-912-01	RES, ADJ CARBON	
		< TRANSFORMER >	
⚠T101	9-903-990-01	TRANCE, CONVERTOR 500	1/3W

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* A-6727-473-A RP-149 BOARD, COMPLETE (750HF/751HF)

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* A-6727-474-A PR-149 BOARD, COMPLETE (900HF)

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3-682-057-11 SPACER (SMALL)

* 3-951-091-01 CASE (LID), SHIELD, RP

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C100	1-164-232-11	CERAMIC CHIP 0.01uF	50V (900HF)
C103	1-163-251-11	CERAMIC CHIP 100PF 5%	50V (900HF)
C104	1-163-121-00	CERAMIC CHIP 150PF 5%	50V (900HF)
C105	1-163-245-11	CERAMIC CHIP 56PF 5%	50V (900HF)
C106	1-163-038-00	CERAMIC CHIP 0.1uF	25V (900HF)
C107	1-126-157-11	ELECT 10uF 20%	16V (900HF)
C260	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C261	1-124-584-00	ELECT 100uF 20%	10V
C262	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C263	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C264	1-124-257-00	ELECT 2.2uF 20%	50V
C265	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C267	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C270	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C273	1-163-031-11	CERAMIC CHIP 0.01uF	50V

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Ref. No.	Part No.	Description			Remark
C274	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C275	1-126-160-11	ELECT	1uF	20%	50V
C276	1-162-306-11	CERAMIC	0.01uF	20%	16V
C277	1-163-234-11	CERAMIC CHIP	20PF	5%	50V
C280	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C281	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C290	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C801	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C802	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C803	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C804	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C805	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C806	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C808	1-124-584-00	ELECT	100uF	20%	10V
C809	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C810	1-124-584-00	ELECT	100uF	20%	10V
C811	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C812	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C813	1-124-252-00	ELECT	0.33uF	20%	50V
C814	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C815	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C816	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C817	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C818	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C819	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C820	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C822	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C823	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C824	1-124-589-11	ELECT	47uF	20%	16V
C825	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C826	1-124-589-11	ELECT	47uF	20%	16V
C827	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C828	1-162-306-11	CERAMIC	0.01uF	20%	16V
C832	1-162-306-11	CERAMIC	0.01uF	20%	16V
C834	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C835	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C836	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C840	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C841	1-124-589-11	ELECT	47uF	20%	16V
C843	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C844	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C887	1-162-306-11	CERAMIC	0.01uF	20%	16V
C890	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C891	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN801	1-563-590-11	CONNECTOR, FLEXIBLE 13P			
CN802	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P			

Ref. No.	Part No.	Description				Remark
* CN803	1-564-029-00	PIN, CONNECTOR 4P				
CN804	1-506-484-11	PIN, CONNECTOR 5P				
		< DIODE >				
D801	8-719-911-19	DIODE 1SS119				
D802	8-719-911-19	DIODE 1SS119				
D803	8-719-911-19	DIODE 1SS119				
D804	8-719-911-19	DIODE 1SS119				
D805	8-719-400-18	DIODE MA152WK				
D806	8-719-400-18	DIODE MA152WK				
		< IC >				
IC260	8-759-055-49	IC AN3327K				
IC801	8-759-046-75	IC HA118162NT				
		< JUMPER RESISTOR >				
JR811	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR812	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR813	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR814	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR815	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR816	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR817	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR818	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR819	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR820	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR821	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR822	1-216-296-00	METAL CHIP	0	5%	1/8W	(900HF)
JR823	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR824	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR825	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR826	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR827	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR828	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR829	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR830	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR831	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR832	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR834	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR835	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR837	1-216-296-00	METAL CHIP	0	5%	1/8W	
		< COIL >				
L100	1-410-507-11	INDUCTOR 6.8uH (900HF)				
L101	1-414-189-31	INDUCTOR 100uH (900HF)				
L260	1-414-189-31	INDUCTOR 100uH				
L261	1-414-187-11	INDUCTOR 47uH				
L801	1-410-336-11	INDUCTOR 220uH				

Ref. No.	Part No.	Description	Remark
L802	1-410-336-11	INDUCTOR 220uH	
L803	1-414-189-31	INDUCTOR 100uH	
L804	1-414-189-31	INDUCTOR 100uH	
L806	1-410-516-11	INDUCTOR 39uH	
L807	1-410-518-41	INDUCTOR 56uH	
L809	1-410-512-11	INDUCTOR 18uH	
L810	1-414-192-31	INDUCTOR 180uH	
L811	1-414-189-31	INDUCTOR 100uH	
L812	1-414-189-31	INDUCTOR 100uH	
L815	1-410-509-11	INDUCTOR 10uH	
L816	1-410-509-11	INDUCTOR 10uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q100	8-729-216-22	TRANSISTOR 2SA1162	(900HF)
Q101	8-729-216-22	TRANSISTOR 2SA1162	(900HF)
Q102	8-729-421-19	TRANSISTOR UN2213	(900HF)
Q802	8-729-230-49	TRANSISTOR 2SC2712-G	
Q803	8-729-424-18	TRANSISTOR UN2113	
Q804	8-729-230-49	TRANSISTOR 2SC2712-G	
Q805	8-729-216-22	TRANSISTOR 2SA1162	
Q806	8-729-216-22	TRANSISTOR 2SA1162	
Q807	8-729-230-49	TRANSISTOR 2SC2712-G	
Q809	8-729-230-49	TRANSISTOR 2SC2712-G	
Q810	8-729-421-19	TRANSISTOR UN2213	
Q811	8-729-301-98	TRANSISTOR 2SB1000A-L	
Q812	8-729-230-49	TRANSISTOR 2SC2712-G	
Q814	8-729-421-19	TRANSISTOR UN2213	
Q822	8-729-216-22	TRANSISTOR 2SA1162	
Q823	8-729-216-22	TRANSISTOR 2SA1162	
Q824	8-729-216-22	TRANSISTOR 2SA1162	
Q826	8-729-424-18	TRANSISTOR UN2113	
Q827	8-729-421-19	TRANSISTOR UN2213	
Q828	8-729-421-19	TRANSISTOR UN2213	
Q829	8-729-421-19	TRANSISTOR UN2213	
Q830	8-729-421-19	TRANSISTOR UN2213	

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R101	1-216-011-00	METAL CHIP	27	5%	1/10W(900HF)
R104	1-216-041-00	METAL CHIP	470	5%	1/10W(900HF)
R105	1-247-836-11	CARBON	1.6K	5%	1/4W (900HF)
R106	1-216-095-00	METAL CHIP	82K	5%	1/10W(900HF)
R107	1-216-089-00	METAL CHIP	47K	5%	1/10W(900HF)
R108	1-216-689-11	METAL CHIP	39K	0.5%	1/10W(900HF)
R262	1-216-035-00	METAL CHIP	270	5%	1/10W
R263	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R265	1-216-033-00	METAL CHIP	220	5%	1/10W
R266	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R267	1-216-035-00	METAL CHIP	270	5%	1/10W
R271	1-216-079-00	METAL CHIP	18K	5%	1/10W
R272	1-216-097-00	METAL CHIP	100K	5%	1/10W
R290	1-216-049-00	METAL CHIP	1K	5%	1/10W
R801	1-216-025-00	METAL CHIP	100	5%	1/10W
R802	1-216-037-00	METAL CHIP	330	5%	1/10W
R804	1-216-605-11	METAL CHIP	12	1%	1/10W
R806	1-216-025-00	METAL CHIP	100	5%	1/10W
R807	1-216-025-00	METAL CHIP	100	5%	1/10W
R808	1-216-625-11	METAL CHIP	82	0.5%	1/10W
R809	1-216-617-11	METAL CHIP	39	1%	1/10W
R810	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R811	1-216-037-00	METAL CHIP	330	5%	1/10W
R812	1-216-025-00	METAL CHIP	100	5%	1/10W
R813	1-216-047-00	METAL CHIP	820	5%	1/10W
R815	1-216-085-00	METAL CHIP	33K	5%	1/10W
R816	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R817	1-216-049-00	METAL CHIP	1K	5%	1/10W
R818	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R819	1-216-198-00	METAL CHIP	1K	5%	1/8W
R820	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R821	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R822	1-216-039-00	METAL CHIP	390	5%	1/10W
R823	1-216-047-00	METAL CHIP	820	5%	1/10W
R824	1-216-039-00	METAL CHIP	390	5%	1/10W
R825	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R826	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R827	1-216-045-00	METAL CHIP	680	5%	1/10W
R828	1-216-043-00	METAL CHIP	560	5%	1/10W
R830	1-216-046-00	METAL CHIP	750	5%	1/10W
R831	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R832	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R833	1-216-049-00	METAL CHIP	1K	5%	1/10W
R834	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R838	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R839	1-216-089-00	METAL CHIP	47K	5%	1/10W
R840	1-249-421-11	CARBON	2.2K	5%	1/4W F
R845	1-216-047-00	METAL CHIP	820	5%	1/10W
R853	1-216-218-00	METAL GLAZE	6.8K	5%	1/8W
R854	1-216-218-00	METAL GLAZE	6.8K	5%	1/8W
R855	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R856	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R857	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R858	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R859	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R860	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R861	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R862	1-249-427-11	CARBON	6.8K	5%	1/4W F
R863	1-216-037-00	METAL CHIP	330	5%	1/10W
R864	1-216-309-00	METAL CHIP	5.6	5%	1/10W

Ref. No.	Part No.	Description	Remark
R870	1-249-429-11	CARBON 10K 5% 1/4W	
R871	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R872	1-249-409-11	CARBON 220 5% 1/4W	F
R885	1-216-198-00	METAL CHIP 1K 5% 1/8W	
R887	1-216-296-00	METAL CHIP 0 5% 1/8W	
R888	1-216-296-00	METAL CHIP 0 5% 1/8W	
R891	1-249-417-11	CARBON 1K 5% 1/4W	F

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Ref. No.	Part No.	Description	Remark
*	A-6754-499-A	ST-52 BOARD, COMPLETE	
		< CAPACITOR >	
C001	1-102-822-00	CERAMIC 390PF 5% 50V	
C002	1-124-907-11	ELECT 10uF 20% 50V	
		< CONNECTOR >	
CN001	1-580-326-11	PIN, CONNECTOR 4P	
CN002	1-580-326-11	PIN, CONNECTOR 4P	
		< DIODE >	
D001	8-719-911-19	DIODE 1SS119	
		< RESISTOR >	
R001	1-247-899-11	CARBON 680K 5% 1/4W	
R002	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R003	1-247-891-00	CARBON 330K 5% 1/4W	

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MISCELLANEOUS

Ref. No.	Part No.	Description	Remark
24	1-466-916-11	REMOTE COMMANDER (RMT-V129)(900HF)	
24	1-466-968-31	REMOTE COMMANDER (RMT-V130)(750HF/751HF)	
⚠55	1-413-788-11	POWER BLOCK (750HF/751HF)	
⚠55	1-413-792-11	POWER BLOCK (900HF:US, CND, MX)	
⚠55	1-413-793-11	POWER BLOCK (900HF:CHL, PX)	
FL101	1-517-132-11	INDICATOR TUBE, FLUORESCENT	

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ACCESSORIES & PACKING MATERIALS

Ref. No.	Part No.	Description	Remark
	1-417-139-11	MATCHING TRANSFORMER, ANTENNA (750HF/751HF/900HF:US, CND, PX)	
	1-417-182-11	CONVERTER (EAC-25) (900HF:MX, CHL)	
	1-466-905-11	CABLE MOUSE	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (900HF:CHL)	
⚠	1-574-085-11	CORD, POWER(900HF:MX)	
⚠	1-574-131-21	CORD, POWER SUPPLY(900HF:CHL)	
	1-575-334-11	CORD, CONNECTION	
⚠	1-590-135-31	CORD, POWER(750HF/751HF/900HF:US, CND, PX)	
	1-696-592-11	CORD, CONNECTION (NTSC)	
	3-756-090-21	MANUAL, INSTRUCTION (ENGLISH)(750HF/751HF)	
	3-756-090-31	MANUAL, INSTRUCTION (FRENCH)(750HF:CND/751HF:CND)	
	3-756-092-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH)(900HF:MX, CHL, PX)	
	3-756-092-21	MANUAL, INSTRUCTION (ENGLISH)(900HF)	
	3-756-092-31	MANUAL, INSTRUCTION (FRENCH)(900HF:CND)	
*	3-951-094-01	CUSHION (UPPER)	
*	3-951-098-01	CUSHION (LOWER)	
*	3-951-099-21	INDIVIDUAL CARTON (900HF:US, CND, PX)	
*	3-951-099-51	INDIVIDUAL CARTON (750HF)	
	3-951-099-61	INDIVIDUAL CARTON (751HF)	
	3-953-808-01	INDIVIDUAL CARTON (900HF:MX)	
	3-953-809-01	INDIVIDUAL CARTON (900HF:CHL)	

* * *

HARDWARE LIST

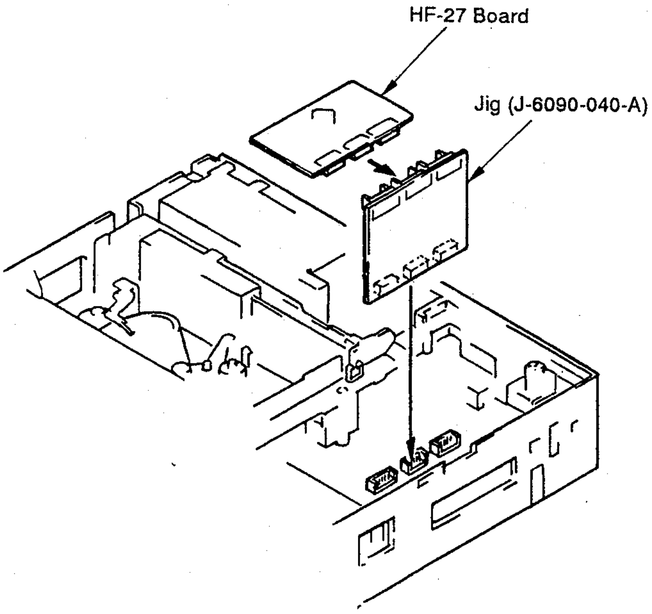
#1	7-621-255-25	SCREW +PTT 2X4 (S)
#4	7-682-645-01	SCREW +PS 3X4
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3
#6	7-682-548-04	SCREW +P 3X8
#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#8	7-621-732-08	SCREW
#9	7-682-547-04	SCREW +P 3X6
#10	7-628-254-00	SCREW +PS 2.6X5
#11	7-624-102-04	STOP RING 1.5, TYPE -E
#12	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3
#13	7-682-546-04	SCREW +P 3X5

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 7
ELECTRICAL ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram relevant to the adjustments on Page 162.

- When checking HF-27 board, use th translation board jig (J-6090-040-A).


HF-27 Board
Jig (J-6090-040-A)

7-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

7-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (min. 8 digits)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion factor meter
10) Voice multiple signal generator
11) Alignment tape
    Part Code: H7099046H (MH-1)
12) HiFi alignment tape
    Part Code: H7099153H (Hi-Fi 400 Hz)

7-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

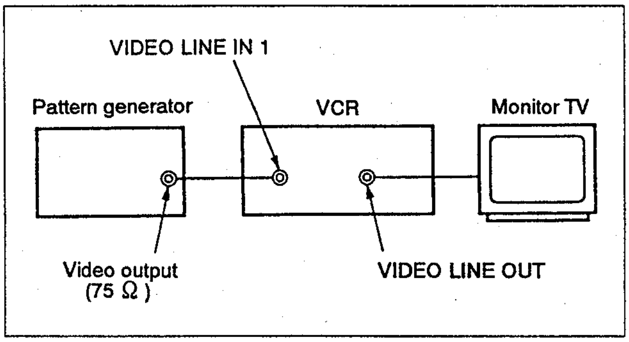

VIDEO LINE IN 1
Pattern generator
VCR
Monitor TV
Video output (75 Ω)
VIDEO LINE OUT

Fig. 7-1.

7-1-3. Set-up of Adjustment

In this adjustment, NTSC pattern generator is connected with LINE 1 input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst sigal and "red" signal are 0.30 : 0.66. Fig. 7-2. shows video signals (color bars) used in adjusting the video section.

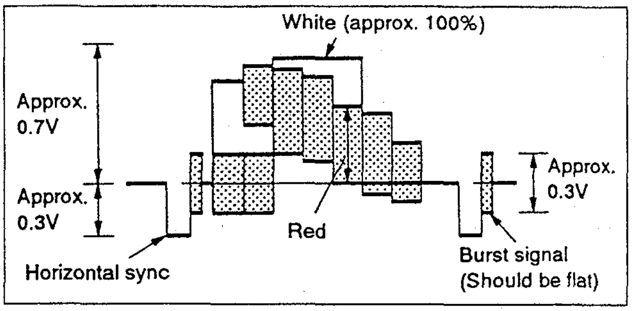


Fig. 7-2.

7-1-4. Alignment Tapes

[Alignment Tape (MH-1)]

	Mode	Time	Video signal	Audio signal
1	SP	Ten minutes	Stair-step	7 kHz
2		Five minutes	—	3 kHz
3		Ten minutes	Color	1 kHz
4		Three minutes	RF	—

[Hi-Fi Alignment Tape]

	Mode	Time	Video signal	Audio signal
1	SP	Six minutes	Monaural scope	Nomal: no signal HIFI: 400 Hz

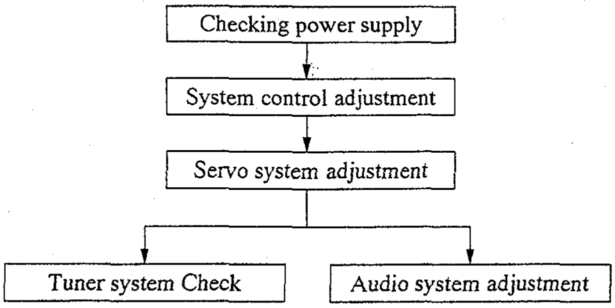
7-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jacks 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kΩ , − 7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kΩ , − 4 dBs
Video outputs	LINE OUT : phono jack 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio outputs	LINE OUT : phono jack − 7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 kΩ

7-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



7-2. POWER SUPPLY CHECK (POWER BLOCK)

※ no mark : 900HF, [ ] : 750HF/751HF

Mode	E-E
Measuring Instrument	Digital voltmater
UNSW 6.0 V check	
Measurement Point	Pin ⑤ of CN202 [CN2]
Specified Value	5.9 ± 0.05 Vdc
UNSW − 30 V check	
Measurement Point	Pin ⑤ of CN202 [CN2]
Specified Value	− 27.0 ± 3.0 Vdc
UNSW 35 V check	
Measurement Point	Pin ⑨ of CN202 [CN2]
Specified Value	37.0 ± 3.0 Vdc
UNSW 12 V check	
Measurement Point	Pin ① of CN202 [CN2]
Specified Value	13.6 ± 0.4 Vdc
MTR 12 V check	
Measurement Point	Pin ⑩ of CN201 [CN1]
Specified Value	13.0 ± 0.4 Vdc
HEATER 4 V check	
Measurement Point	+ : Pin ② of CN201 [CN1] − : Pin ① of CN201 [CN1]
Specified Value	4.1 ± 0.3 Vdc

Checking Method:

1) Confirm that each voltage meets its specified value.

POWER BLOCK (Conductor side)

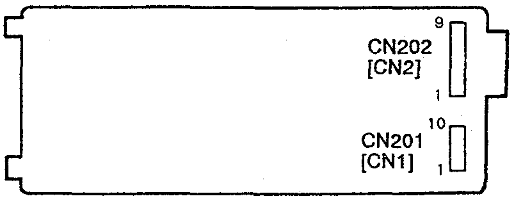


Fig. 7-3.

7-3. SYSTEM CONTROL ADJUSTMENT

7-3-1. Clock Check (MF-172 Board)

Measurement Point	Pin ⑥ of IC101
Measurement Instrument	Frequency counter
Specified Value	10.0 ± 0.2 MHz

Checking Method:

1) Check the reading on frequency counter 10.0 ± 0.2 MHz.

7-3-2. Clock Adjustment (MF-172 board)

Measurement point	Pin ② of IC101
Measurement Equipment	Frequency counter (Interval counter mode)
Adjustment Element	CT101
Specified Value	0.125 ± 0.0000005 sec

Note: Do not adjustment CT101 except when replacing IC101.

Adjustment Method :

1) Connect the frequency counter as shown below.
2) Set oscillation frequency to the specified value using CT 101.

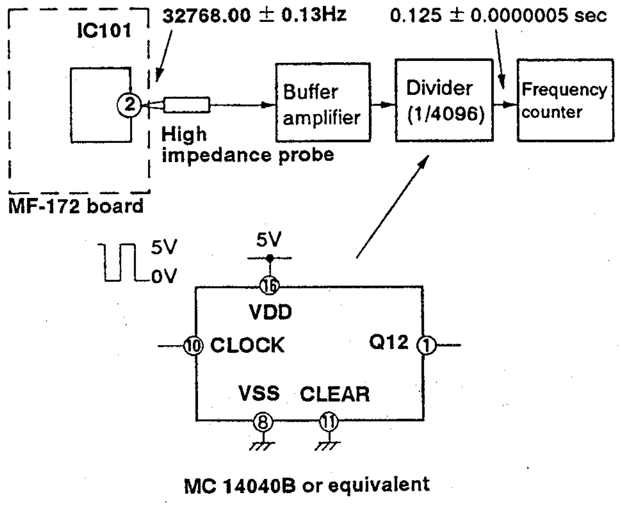

IC101
32768.00 ± 0.13Hz
0.125 ± 0.0000005 sec
②
Buffer amplifier
Divider (1/4096)
Frequency counter
High impedance probe
MF-172 board
5V
0V
5V
⑯
VDD
⑩ CLOCK
Q12 ①
VSS CLEAR
⑧
⑪
MC 14040B or equivalent

Fig. 7-4.

7-4. SERVO SYSTEM ADJUSTMENT

7-4-1. Switching Position Adjustment (MA-144 Board)

Mode	PB
Signal	Alignment tape : SP stair-step section
Measurement Point	CH1: CNJ701 (VIDEO LINE OUT) CH2: Pin ⑲ of CN601 (RF SWP)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202
Specified Value	6.5 ± 0.5 H (410 ± 30 μsec)

Adjusting Method:

1) Once set to STOP mode, then to PB mode.
2) Check that switching position is 6.5 ± 0.5 H. (410 ± 30 μsec)
   If not meet the specified value, turn RV202 and repeat steps 1) to 2).

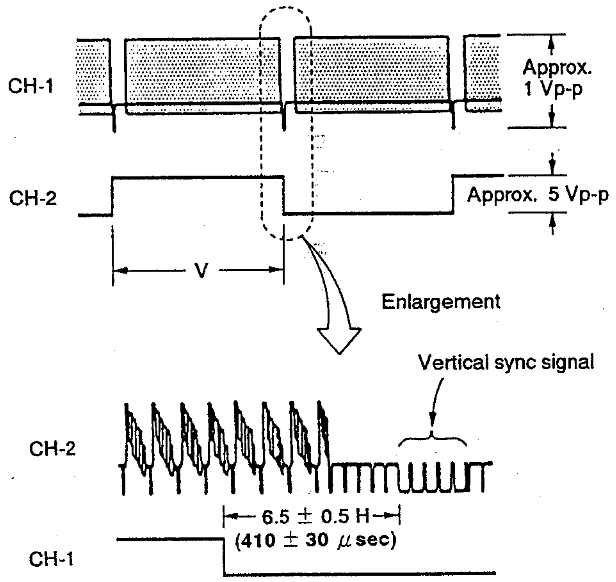

CH-1
Approx. 1 Vp-p
CH-2
Approx. 5 Vp-p
V
Enlargement
Vertical sync signal
CH-2
6.5 ± 0.5 H
(410 ± 30 μsec)
CH-1

Fig. 7-5.

7-5. AUDIO SYSTEM ADJUSTMENTS

- Adjust the audio system in the LP mode, unless otherwise specified.
  Use the alignment tape.
- Adjust both Lch and Rch.

[Connection]

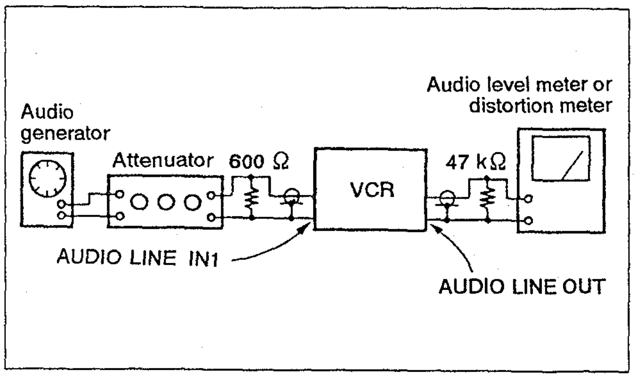


Fig. 7-6.

7-5-1. Hi-Fi Audio System Adjustment

- Set switches and knobs to the following positions to make adjustment unless otherwise specified.
  INPUT SELECT switch ...... LINE 1

[Adjusting Sequence]

1. AF switching position
2. VCO fo adjustment
3. AFM deviation adjustment
4. BPF fo adjustment

1. AF Switching Position Adjustment (MA-144 Board)

Mode	PB
Signal	Alignment tape (HiFi 400 Hz)
Measurement Point	CH1: Pin ① of CN857 (MA-144 Board) CH2: Pin ③ of CN803 (RP-149 Board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	Fig. 7-6.

Adjusting method:

1) Adjust RV201 for no dropout.
   (Turn and adjust RV201 to the mid-rotation of no dropout range.)

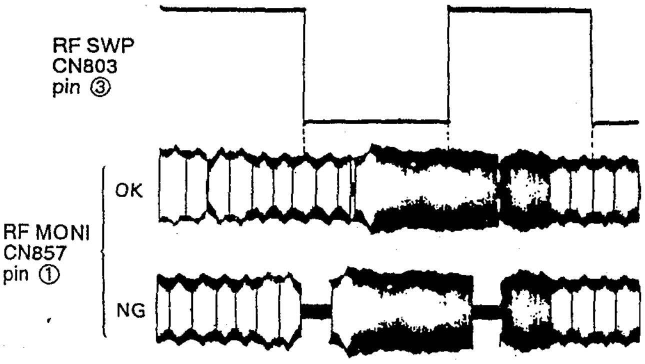


Fig. 7-7

2. VCO fo Adjustment (HF-27 Board)

Mode	Recording
Signal	No signal
Measuring Instrument	Frequency counter
1.3 MHz Adjustment	
Measurement Point	Pin ㉞ of IC201
Adjusting Element	RV206
Specified Value	1.3 MHz ± 1 kHz
1.7 MHz Adjustment	
Measurement Point	Pin ㊼ of IC201
Adjusting Element	RV202
Specified Value	1.7 MHz ± 1 kHz

Note: Connect the frequency counter through a probe of high input impedance (more than 10 MΩ) and low capacity (10 pF or less)

Adjusting Method:

1) Connect the frequency counter to each measurement point.
2) Adjust each volume so that each frequency meets its specified value.

3. Deviation Adjustment (HF-27 Board)

The adjustment element of the right channel is indicated in [ ].

Mode	Playback
Signal	Hi-Fi alignment tape
Measurement Point	AUDIO LINE OUT left [right]
Measurement Equipment	Audio level meter
Adjustment Element	RV207 [RV203]
Specified Value	− 7.5 ± 0.2 dBs

Adjustment Method:

1) Make sure that "STEREO" segment lights on the fluorescent display.
2) Adjust left [right] channel audio output level to − 7.5 ± 0.2 dBs using RV207 [RV203].

4. BPF fo Adjustment (HF-27 Board)

Mode	PB
Signal	Carrier Frequency : 1,505 MHz, No modulation Input 200 mVp-p : Pin ⑯ of CN202
Measurement Point	Pin ⑱ of CN202 Pin ㊽ of IC201
Measuring Instrument	Oscilloscope
Adjusting Element	RV204

Adjusting Method:

1) Adjust RV204 so that the level Ⓐ goes to the same level as Ⓑ.

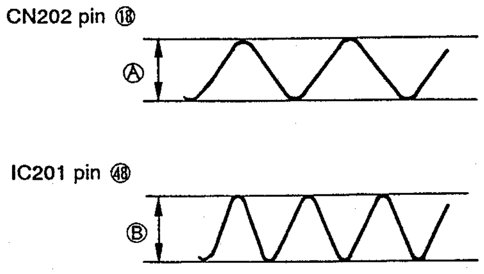


Fig. 7-8.

7-5-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Make adjustment with the switches set to the following positions.
  INPUT SELECT switch ...... LINE 1

[Adjusting Sequence]

1. ACE head adjustment ... See Mechanism Block Adjustment
2. E-E output level check
3. Recording bias adjustment
4. Overall level characteristic and distorsion check

1. ACE Head Adjustment

See "Mechanism Block Adjustment".

2. E-E Output Level Check

Mode	E-E
Signal	L, R : 400 Hz, − 7.5 dBs
Measurement Point	AUDIO LINE OUT L or R
Adjusting Element	Audio level meter
Specified Value	− 7.5 ± 2 dBs

Confirming Method:

1) Simultaneously input a signal of 400 Hz, − 7.5 dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is − 7.5 ± 2 dBs.

3. Recording Bias Adjustment (MA-144 Board)

Mode	REC and PB
Signal	400 Hz, − 30 dBs 7 kHz, − 30 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter
Adjusting Element	RV851
Specified Value	0 ± 1 dB

Adjusting Method:

1) Supply a signal of 400 Hz, − 30 dBs to Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate − 30 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output levels within a range of the 400 Hz playback output level 0 ± 1 dB. When beyond this range, sdjust RV851 and repeat the steps 1) through 7) above.

4. Overall Level Characteristic and Distortion Factor Check

Mode	REC and PB
Signal	400 Hz, − 7.5 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter and distortion factor gauge
Specified Value	Playback level : − 7.5 ± 2 dBs Distortion factor : 4% or less

Confirming Method:

1) Supply an audio signal of 400 Hz, − 7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording.
3) Playback a recorded portion.
4) Confirm that a playback level is − 7.5 ± 2 dBs.
5) Confirm that a distortion factor is within 4%.

7-6. TUNER SYSTEM CHECK

7-6-1. RF AGC Check (MA-144 Board)

Signal	RF : 13 CH, 68 ± 5dB μV (Video: Color Bar Audio: Optional)
Mesurement Point	TU802 Pin ⑦
Measuring Instrument	Digital voltmeter
Specified Value	6.0 ± 0.5 V

Cheking Method:

1) Tune in 13CH.
2) Connect a digital voltmeter to TU802 Pin ⑦ and confirm the reading on a digital voltmeter gose 6.0 ± 0.5 V.

SLV-750HF/751HF/900HF

9-973-373-11
501

Sony Corporation
Home Video Group

English
93B0540-1
Printed in Japan
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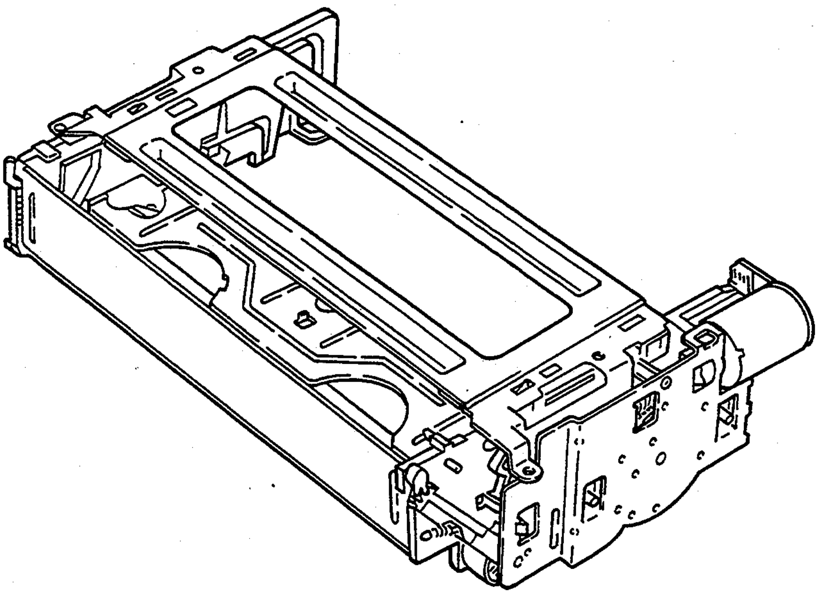
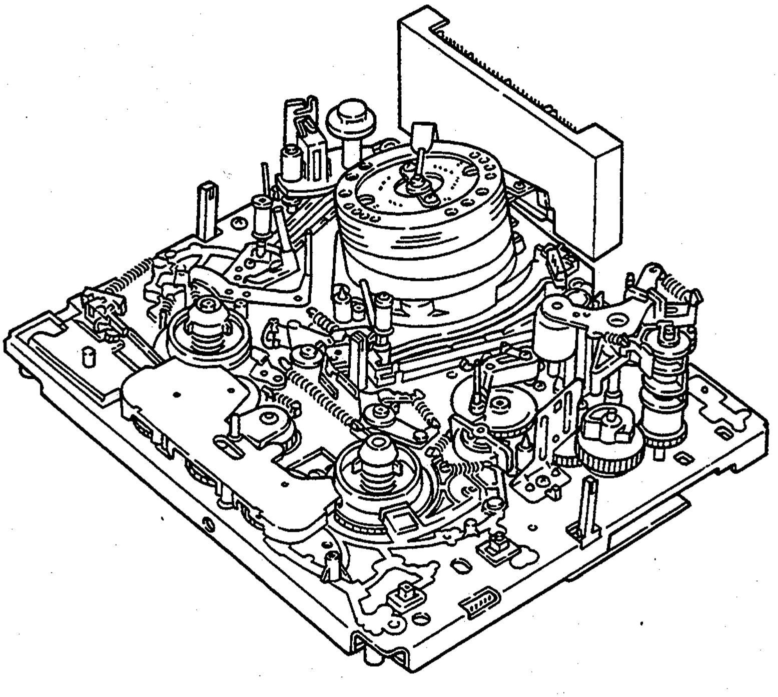
Published by CV Quality Engineering DIV.

VIDE-V12926

VHS MECHANICAL ADJUSTMENT MANUAL Ⅱ

- Please use in conjunction with the SERVICE MANUAL.
- This VHS MECHANICAL ADJUSTMENT MANUAL Ⅱ can be used for NTSC system and PAL system.





VHS VIDEO RECORDER

SONY®

MICROFILM

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1. PREPARATIONS FOR CHECKS, ADJUSTMENTS AND REPLACEMENT OF THE DECK MECHANISM

Note : Refer to "Replacement Method" in the Service Guide for instructions on replacing the cabinet and PC boards. DO not perform cassette loading or threading with the VCR positioned upside-down.

1-1. LOADING AND UNLOADING VIDEO CASSETTES WITH THE POWER OFF. (Fig. 1-1.)

1-1-1. Manual loading and unloading

1) Rotate the loading motor in the direction of arrow Ⓐ until loading is compleated.
   (When unloading, rotate the loading motor in the direction of arrowⒷ.)

1-1-2. Loading and unloading using a separate power source.

1) Cassette loading is performed by applying approx. 10V (300 mA) to the power terminal of the loading motor using a stabilized DC power source.
   (When unloading, apply the same voltage to the opposite polarity of the power terminal.)

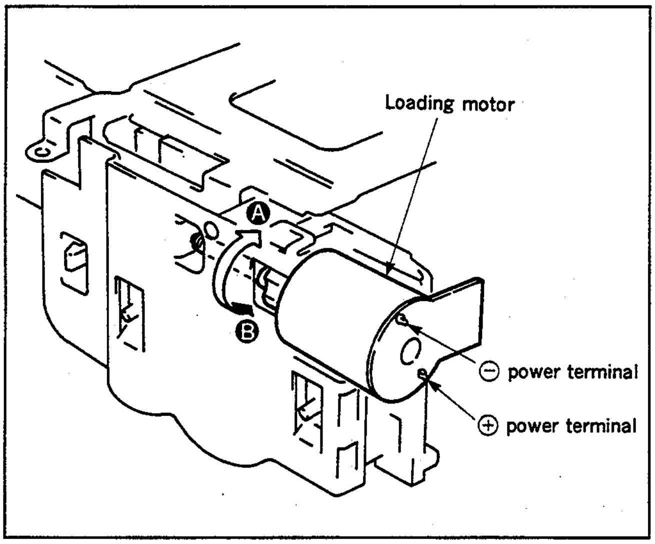


Fig. 1-1.

1-2. THREADING AND UNTHREADING WITH THE POWER OFF. (Fig. 1-2)

1-2-1. Manual threading and unthreading

1) Rotate the cam motor ❶ in the direction of arrowⒶuntil threading is completed.
   (When unthreading, rotate the cam motor ❶ in the direction of arrowⒷ.)

1-2-2. Threading and unthreading using a separate power source.

1) Threading is performed by applying approx. 10V (500 mA) to the power terminal for the cam motor ❶ using a DC stabilized power source.
   (When unthreading, apply the same voltage to the opposite polarity of the power terminal.)

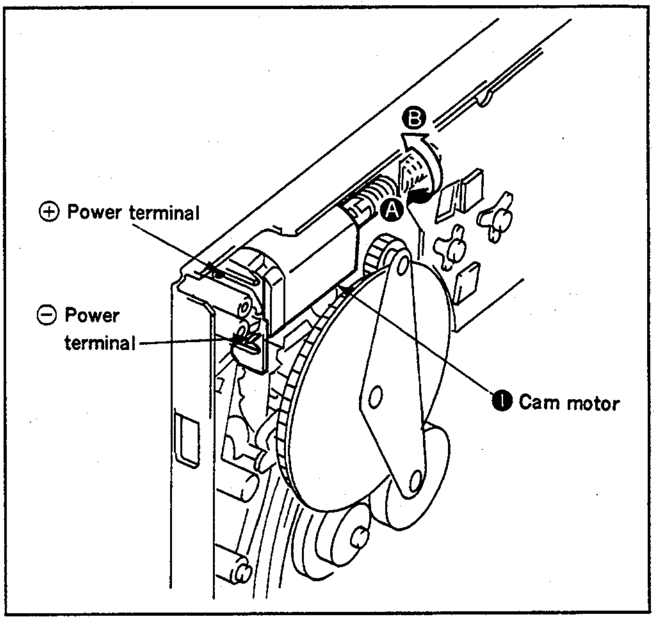


Fig. 1-2.

1-3. TO COMPLETE THREADING WITH THE FL CASSETTE CONTROLLER REMOVED. (Fig. 1-3)

1) Unplug the AC power cord from the power outlet.
2) Shield the supply, take-up sensors and the LED with black-masking tape.
3) Hold the cassatte down switch depressed by taping it, etc.
4) Plug the AC power cord into a power outlet.
   (At this time, the power should turn on and the tape rewinds for approx. 10 seconds, and the power turns off.)
5) Turn the power switch ON so that the mechanism is ready for loading.

Note : In this condition, the VTR is ready to operate in the different operating modes, including the record mode. At this time, rewind the tape for at least 15 seconds, then perform fast forward (FF).

Note : Following the above, be sure to reset the mechanism to the previous state as outlined below.

1) Remove the black-masking tape shielding the supply and take-up sensors, the LED and the tape holding cassette down switch.
2) Unplug the AC power cord from the power outlet to reset the system control microprocessor.

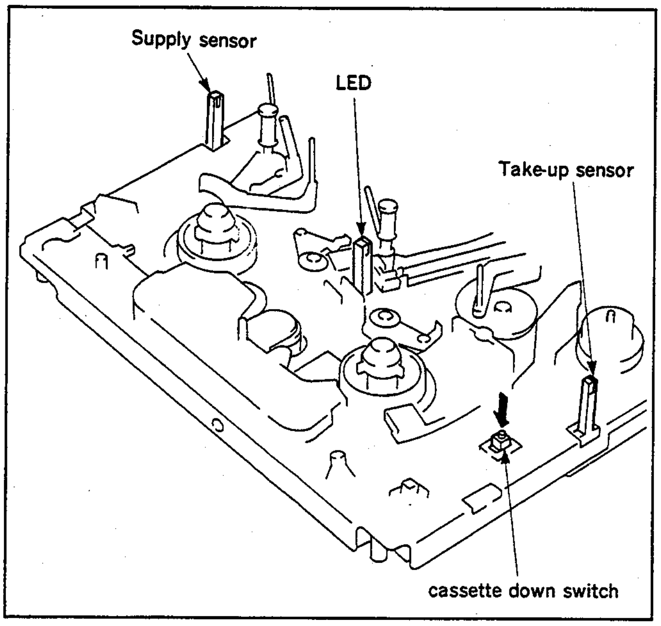


Fig. 1-3.

2. PERIODICAL INSPECTION AND REPLACEMENT

We recommend performing the following periodical inspections and maintenance in order to ensure that the unit operates in top condition and offers full performance, as well as realizes a long life of the mechanism and tapes.

* Be sure to perform the following maintenance procedures after the unit is repaired (regardless how long the unit has been used.)

2-1. CLEANING THE ROTARY HEAD DISC ASS'Y

1) Press Attach a deer skin cloth (Jig. Ref. No. J-7) soaked in cleaning solution (Jig. Ref. No. J-5) lightly to the rotary drum ass'y, then turn the rotary head disc slowly by hand to clean the surface of the rotary drum ass'y. (At this time, do not turn on the power motor to rotate the rotary head disc for cleaning.)
2) Also, do not wipe the drum ass'y by moving the deer skin cloth vertically across the head as this could damage of the tip of the head.

2-2. CLEANING THE TAPE TRANSPORT SYSTEM

1) Clean the tape transport surfaces (tape guide, a drum ass'y surfaces, capstan, pinch roller, etc.) with a deer skin cloth soaked in an approved in the recommended cleaning solution.

2-3. CLEANING THE DRIVE SYSTEM

1) Wipe the drive mechanism with an ordinary cloth soaked in an approved cleaning solution.

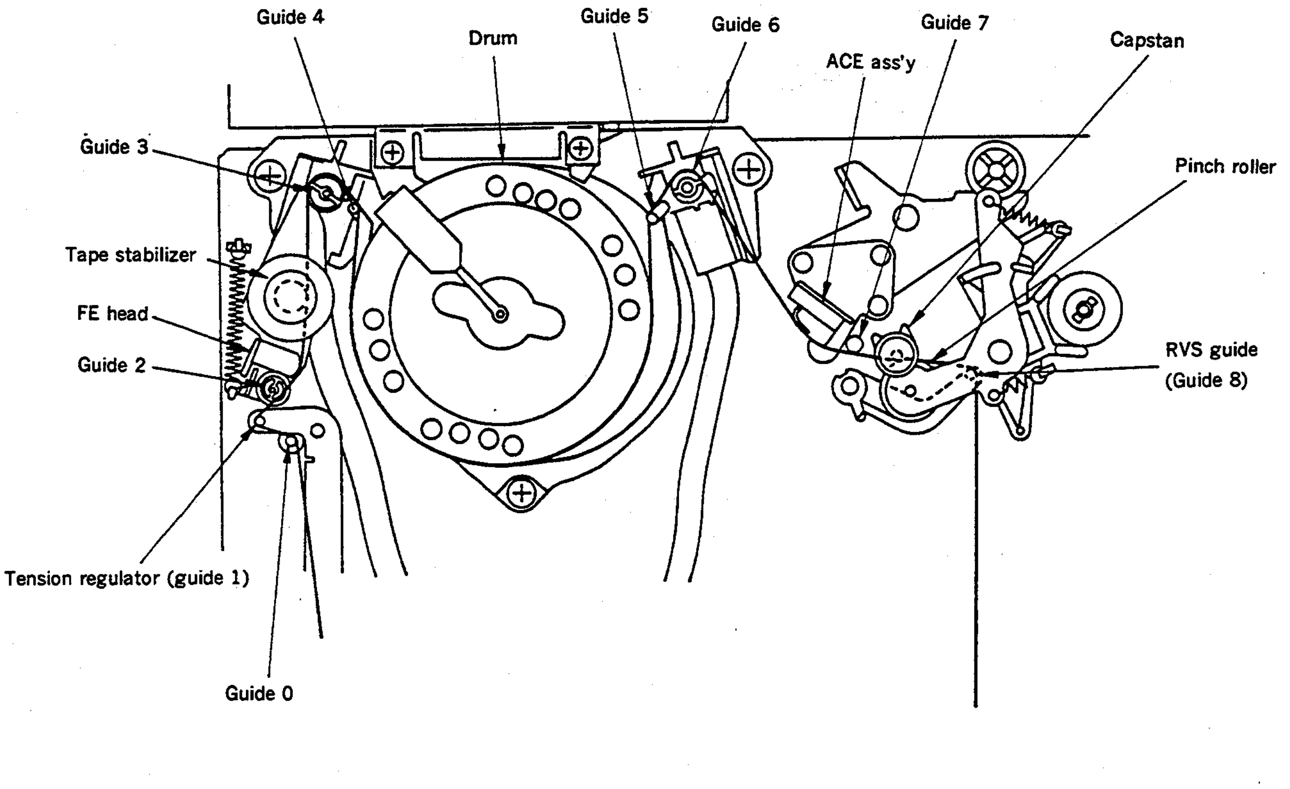

Guide 4
Drum
Guide 5
Guide 6
Guide 7
ACE ass'y
Capstan
Guide 3
Pinch roller
Tape stabilizer
FE head
Guide 2
RVS guide
(Guide 8)
Tension regulator (guide 1)
Guide 0

Fig. 2-1.

2-4. PERIODIC MAINTENANCE

Location of Maintenance and Check		User Hours	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
		Replacement Part No.											
Performance Check	Clean tape running surfaces	——	○	○	○	○	○	○	○	○	○	○	Always perform after repair.
	Clean, degauss ACE ass'y	——	○	○	○	○	○	○	○	○	○	○	
	Clean, degauss video disc ass'y	——	○	○	○	○	○	○	○	○	○	○	Head life is greatly affected by environment and method of use.
Driving System	Reel belt	3-736-013-01	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Always perform after repair.
Tape Running System	Abnormal noise	——	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace source of abnormal noise.
	Back tension measurement	——	–	☆	–	☆	–	☆	–	☆	–	☆	Check according to 4-1-1. Spec: 24—34g/cm (Measured with torque cassette)
	Brake system check	——	–	☆	–	☆	–	☆	–	☆	–	☆	
	REC/PB function check	——	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Always perform after repair.
	Forward torque measurement		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Spec: 80—140 g•cm

○ Cleaning ☆ Check

Note: Refer to the above items for part replacement when performing an overhaul.

2-5. SERVICE TOOLS AND JIGS

Ref. No.	Description	Part No.	Printing on jig	Remarks
J-1	Master plane	H-7099-279-H		
J-2	Reel disc height jig	H-7099-038-H		
J-3	Torque gauge adapter	H-7099-035-H		
J-4	Torque gauge	H-7099-039-H		
J-5	0.93mm Allen wrench	H-7099-202-H		
J-6	NTSC torque cassette VHT-063S PAL torque cassette	J-6082-011-A J-6082-066-A		For rewind torque and back tension
	NTSC torque cassette VHT-404S PAL torque cassette	J-6082-012-A J-6082-067-A		For cue/review
J-7	NTSC alignment tape JVC-MH-1 PAL alignment tape JVC-MH-2	H-7099-046-H H-7099-052-H		
	NTSC Hi-Fi alignment tape PAL Hi-Fi alignment tape	H-7099-153-H H-7099-175-H		
J-8	Cleaning fluid	Y-2031-001-0	———	
J-9	Chamois cloth	2-034-697-00	———	Cleaning
J-10	Head degausser	Widely available	———	Video, audio head degaussing
J-11	Small adjustment mirror (with handle) Small adjustment mirror (mirror only)	J-6080-029-A J-6080-030-1	SL-5052	For tape path and tape running adjustment and check

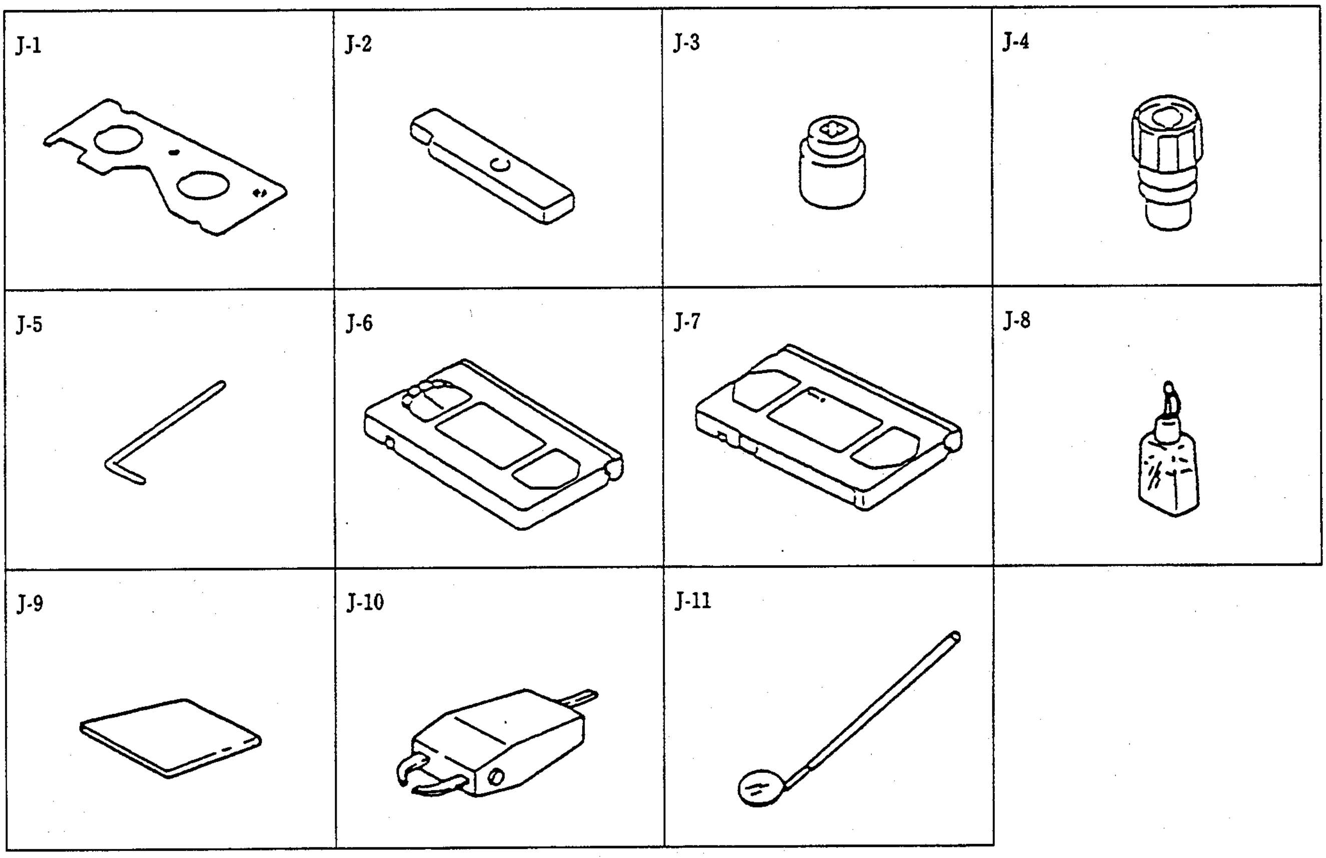


Fig. 2-2. Service tools and jigs

3. REPLACEMENT OF MAJOR COMPONENT PARTS OF THE DECK MECHANISM

Note:
- ○ Refer to "Replacement Method" in the Service Guide for replacing the cabinet and PC boards.
- ○ When mounting parts, reverse the replacement procedure while referring to "Precautions on Mounting Parts".
- ○ After grease coated parts such as gears are replaced, re-grease the replaced part.
- ○ Do not touch the guides (taped surface) and brake shoe directly with your fingers or grease them, etc.
- ○ Gears must be mounted so that they mesh with each other.

3-1. FL MECHANISM

3-1-1. FL door (Fig. 3-1.)

1) Press the claw ❶ in the direction of arrow Ⓐ, then remove the FL door ❷ in the direction of arrow Ⓑ.

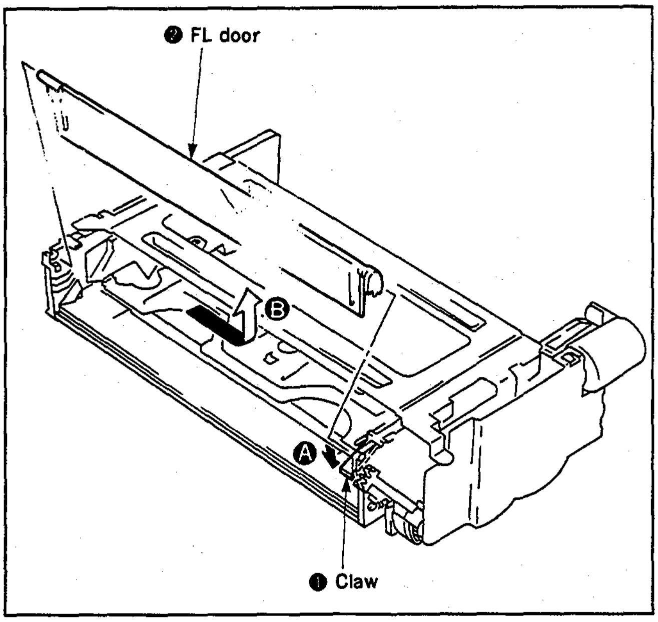

❷ FL door
Ⓑ
Ⓐ
❶ Claw

Fig. 3-1.

3-1-2. Erasure protection lever (Fig. 3-2)

1) Remove the spring ❶.
2) Disengage the claw ❷, then slide the erasure protection lever ❸ in the direction of arrow Ⓐ.
3) Disengage the erasure protection lever ❸ in the direction of arrow Ⓑ.

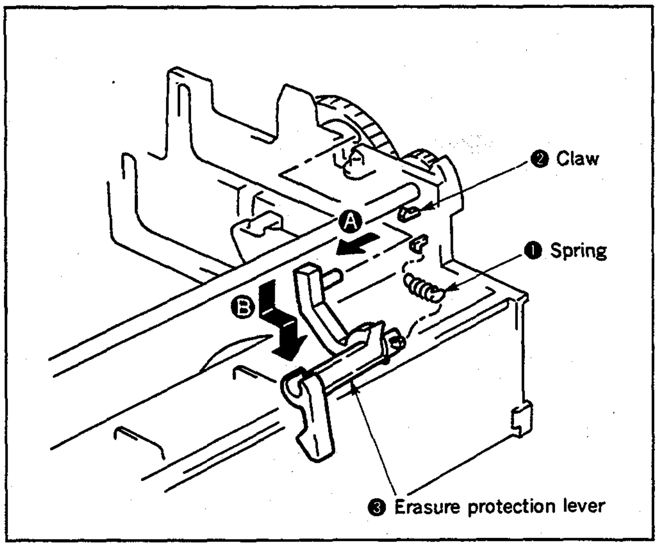

❷ Claw
Ⓐ
❶ Spring
Ⓑ
❸ Erasure protection lever

Fig. 3-2.

3-1-3. Gear cover ass'y (Fig. 3-3)

1) Disengage the four claws ❶, then remove the gear cover ass'y ❷.

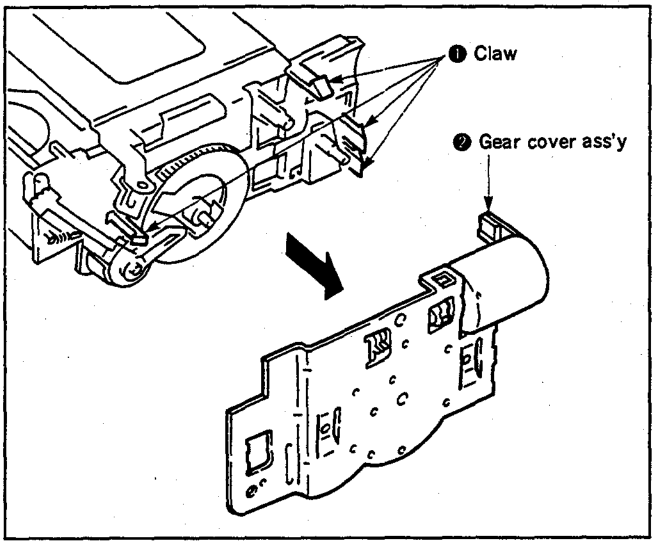

❶ Claw
❷ Gear cover ass'y

Fig. 3-3.

3-1-4. Loading motor, worm gear (FL), worm wheel (FL), worm bearing (Fig. 3-4)

1) Remove washer 3 ❶, then pull out the worm wheel (FL) ❷.
2) Remove the two screws ❸, then remove the loading motor ❹.
3) Remove the worm gear (FL) ❺ and worm bearing ❻.

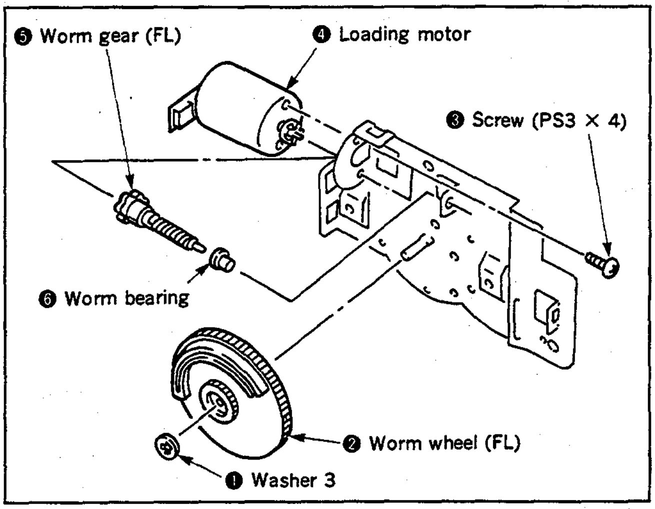

❺ Worm gear (FL)
❹ Loading motor
❸ Screw (PS3 × 4)
❻ Worm bearing
❷ Worm wheel (FL)
❶ Washer 3

Fig. 3-4.

3-1-5. Door OPEN/CLOSE arm (Fig. 3-5)

1) Remove the spring ❶.
2) Pull out the door OPEN/CLOSE arm ❷.

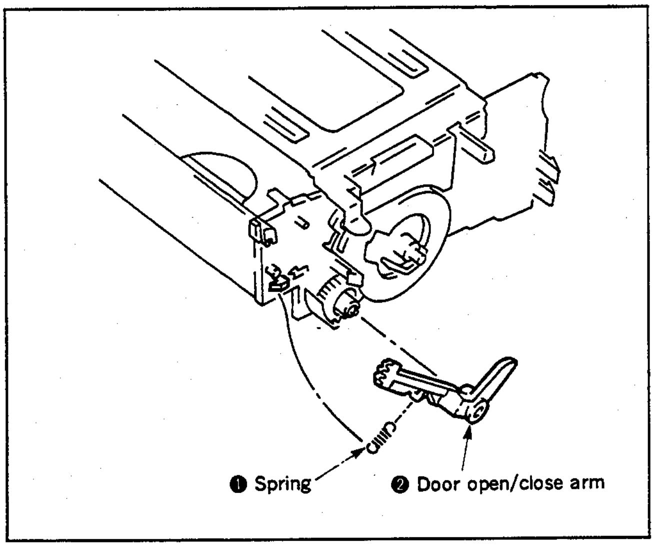

❶ Spring
❷ Door open/close arm

Fig. 3-5.

[Precautions on remounting] (Figs. 3-6 and 3-7.)

- ○ When mounting the gear cover ass'y, match up the two holes on the gear cover ass'y with the two holes on the worm wheel (FL) and then with the hole on the right drive arm ass'y.
- ○ Mesh the FL door and the door OPEN/CLOSE arm together as shown in Ⓐ section in the figure below.
- ○ The erasure protection lever shaft must fit into the groove on the left drive arm ass'y.

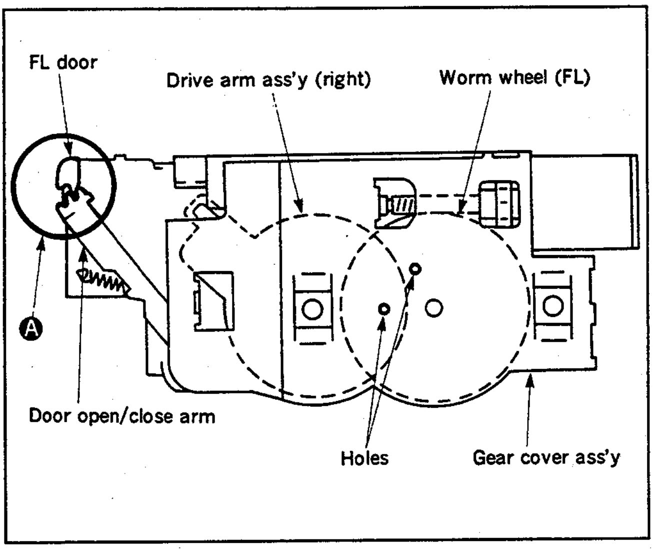

FL door
Drive arm ass'y (right)
Worm wheel (FL)
Ⓐ
Door open/close arm
Holes
Gear cover ass'y

Fig. 3-6.

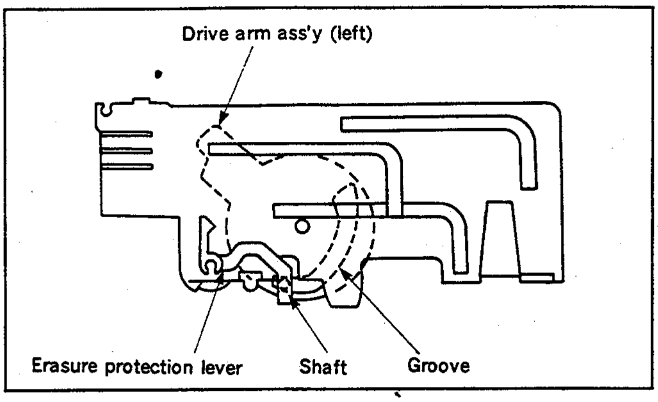

Drive arm ass'y (left)
Erasure protection lever
Shaft
Groove

Fig. 3-7.

3-2. TS ASS'Y AND GUIDE ROLLER ASS'Y No. 2 (Fig. 3-8)

1) Remove the spring ❶.
2) Remove the TS ass'y ❷ in the direction of arrow Ⓐ.
3) Turn guide roller ass'y No. 2 ❸ in the direction of arrow Ⓑ and pull it out.

[Precautions on remounting]

- ○ Clean the surface of guide roller No. 2 ❸ where the tape is attached.
- ○ Apply lubricant over the section shown in Figure A below.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

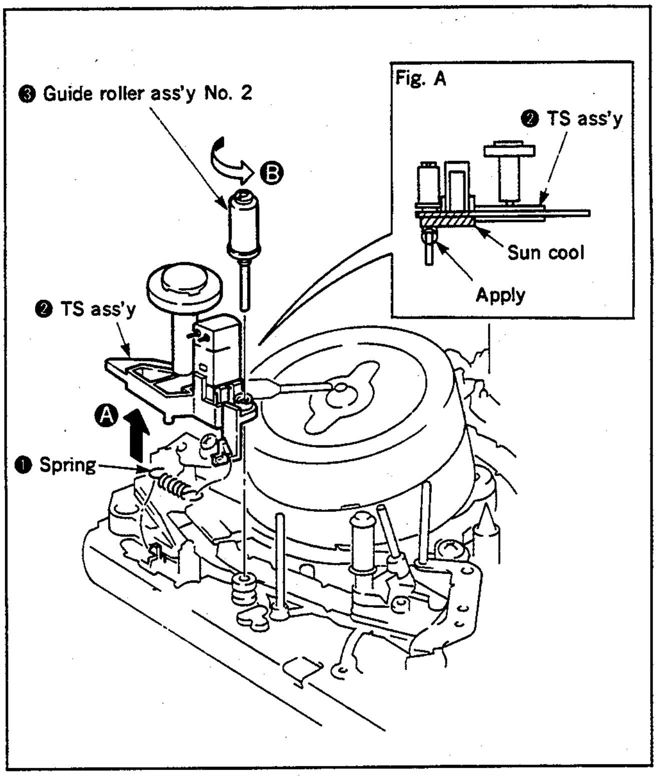

❸ Guide roller ass'y No. 2
Ⓑ
❷ TS ass'y
Ⓐ
❶ Spring
Fig. A
❷ TS ass'y
Sun cool
Apply

Fig. 3-8.

3-3. ACE ASS'Y (Fig. 3-9)

1) Slide the torsion coil spring ❶ in the direction of the arrow.
2) Remove the nylon nut N3 ❷, then pull out the ACE ass'y ❸.
3) Remove the ACE adjuster screw ❹.

[Precautions on remounting]

○ Clean the surface of the ACE ass'y ❸ where the tape is attached.
○ Hook both ends of the torsion coil spring ❶ to the ass'y as shown in Figure A below.
○ Adjust the ACE adjuster screw ❹ to the height shown in Figure A.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

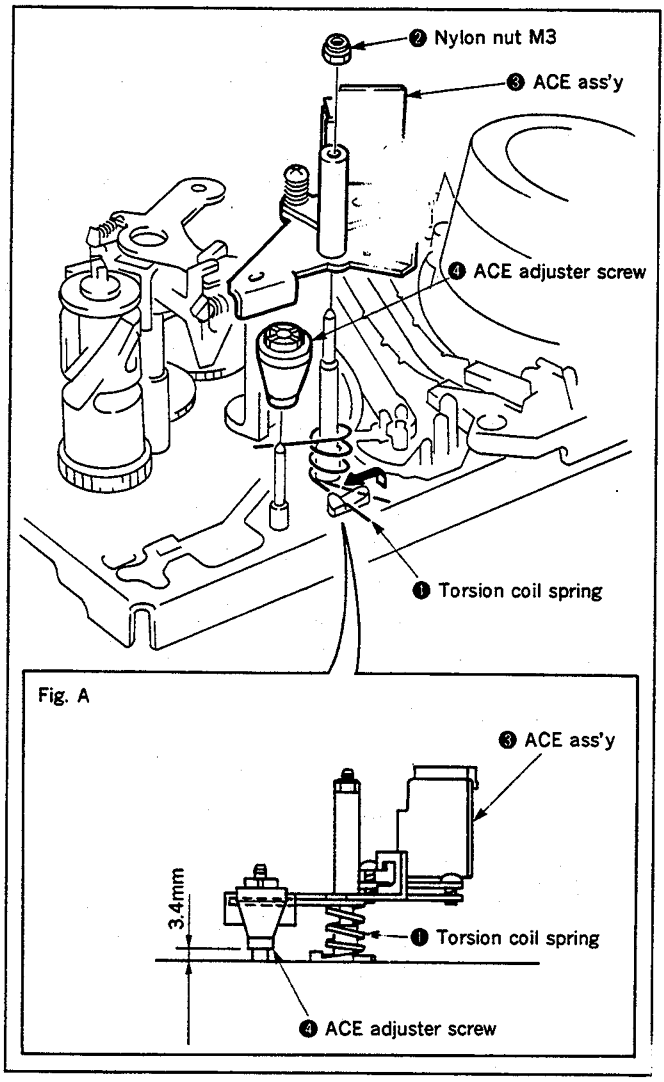

❷ Nylon nut M3
❸ ACE ass'y
❹ ACE adjuster screw
❶ Torsion coil spring
Fig. A
❸ ACE ass'y
3.4mm
❶ Torsion coil spring
❹ ACE adjuster screw

Fig. 3-9.

3-4. DRUM ASS'Y (Fig. 3-10)

1) Remove the three screws ❶, then remove the drum ass'y ❷.

[Precautions on remounting]

○ Do not touch the head tips ❸ and the ground plate ❹ directly with your fingers or tools.
○ Clean the surface of the drum ass'y ❷ where a tape is attached.
○ The stopper ❺ must be attached at the point shown in the figure below.
○ Screws must be fastened with a 6kg•cm (±1kg•cm) screw fastening torque. (The screws can be mounted in any order.)

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

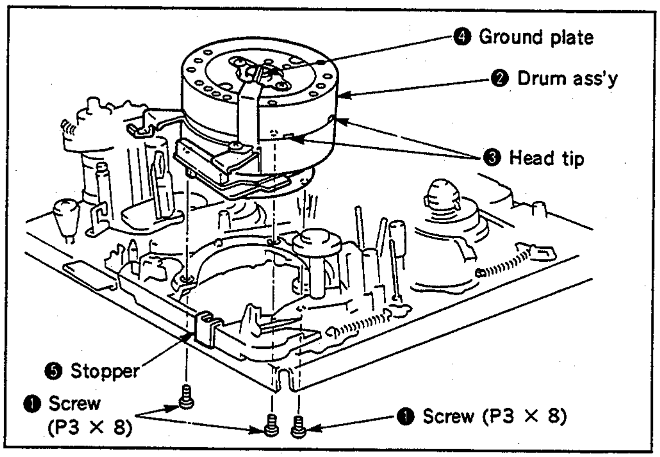

❹ Ground plate
❷ Drum ass'y
❸ Head tip
❺ Stopper
❶ Screw (P3 × 8)
❶ Screw (P3 × 8)

Fig. 3-10.

3-5. DRUM BASE ASS'Y (Fig. 3-11)

1) Remove the drum. (Refer to 3-4.)
2) Remove the three screws ❶, then remove the drum base ass'y ❷.

[Precautions on remounting]

○ The spacer ❸ for the drum base must be mounted in its previous position as shown in the figure below. (Note that some units do not feature the spacer ❸.)
○ Fastening torque must be 10kg•cm (±1kg•cm)
○ The screws must be mounted in order of (a),(b) and (c).

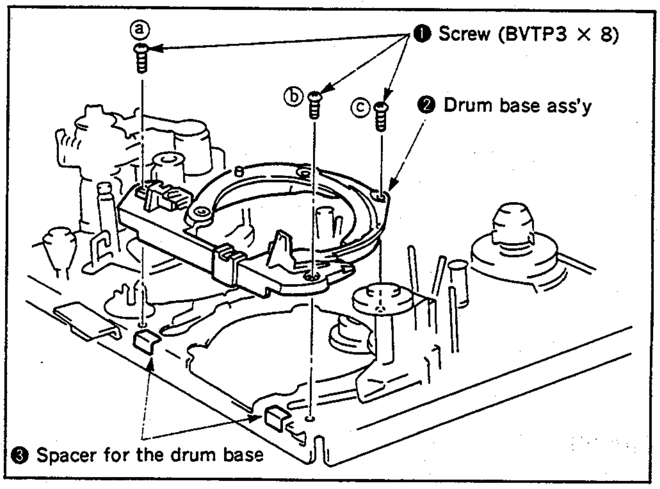

ⓐ
ⓑ
ⓒ
❶ Screw (BVTP3 × 8)
❷ Drum base ass'y
❸ Spacer for the drum base

Fig. 3-11.

3-6. PINCH ROLLER ASS'Y AND ELEVATOR CAM (Fig. 3-12)

1) Remove the two claws ❶, then pull out the stopper ❷.
2) Pull out the pinch roller ass'y ❸.
3) Pull out the elevator cam ❹.

[Precautions on remounting]

- ○ Clean the surface of the pinch roller ass'y ❸ where the tape is attached.
- ○ Match up the 0 marks on the elevator cam ❹ and cam gear, press ❺.

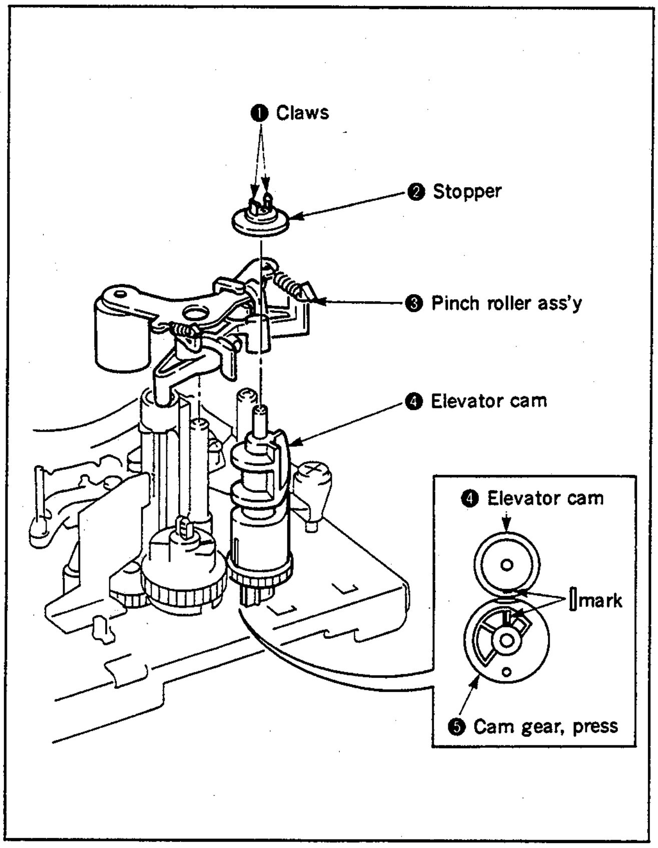

❶ Claws
❷ Stopper
❸ Pinch roller ass'y
❹ Elevator cam
❹ Elevator cam
0 mark
❺ Cam gear, press

Fig. 3-12.

3-7. CAM GEAR, PRESS AND TRANSMISSION GEAR (Fig. 3-13)

1) Remove the pinch roller ass'y. (Refer to 3-6.)
2) Remove the screw ❶, then remove the lid release plate ❷.
3) Remove the two claws ❸, then pull out the cam gear, press ❹.
4) Remove the washer 2 ❺, then pull out the transmission gear ❻.

[Precautions on remounting]

- ○ Check the top and bottom of the transmission gear ❻.
- ○ Match up the hole ❼ on the chassis with the hole ❼ on the cam gear, press ❹.
- ○ Match up the 0 mark on the cam gear, press ❹ with the 0 mark on the alleviator cam ❽.

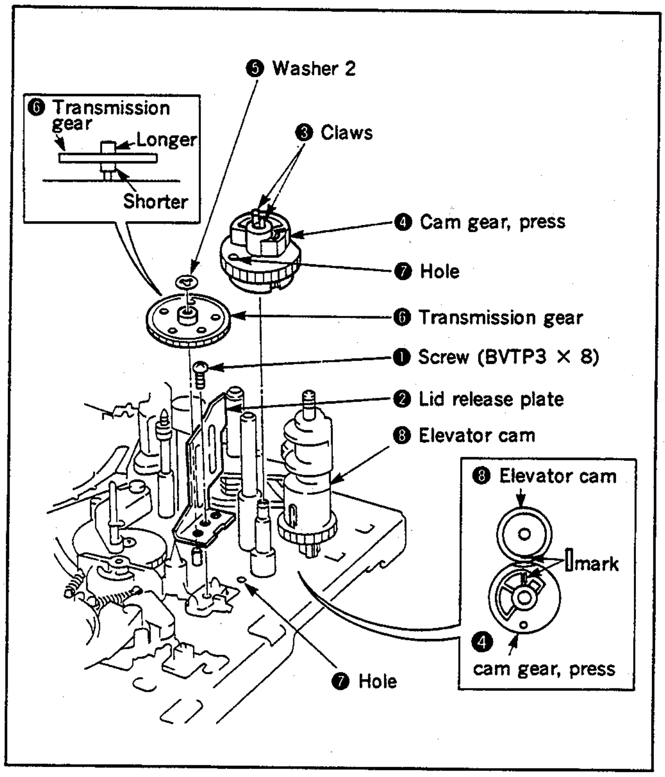

❺ Washer 2
❻ Transmission gear
Longer
Shorter
❸ Claws
❹ Cam gear, press
❼ Hole
❻ Transmission gear
❶ Screw (BVTP3 × 8)
❷ Lid release plate
❽ Elevator cam
❽ Elevator cam
0 mark
❹ cam gear, press
❼ Hole

Fig. 3-13.

3-8. RVS ARM ASS'Y AND RVS CAM GEAR (Fig. 3-14)

1) Remove the nylon nut M2 ❶ and plastic washer ❷.
2) Disengage the claw ❸, then pull out the RVS arm ass'y ❹.
3) Remove washer 2 ❺, then pull out the RVS cam gear ❻.

[Precautions on remounting]

- ○ The holes ❼ in the chassis and in the RVS cam gear ❻ must match up. Also, make sure to match up the holes ❾ on the cam gear, press ❽ and the chassis.
- ○ The spring ❿ must be hooked as shown in Fig. A below.
- ○ Clean the surface of the RVS arm ass'y ❹ where a tape is attached.
- ○ Apply 1/2 drop of lubricant to the shaft ⓫.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

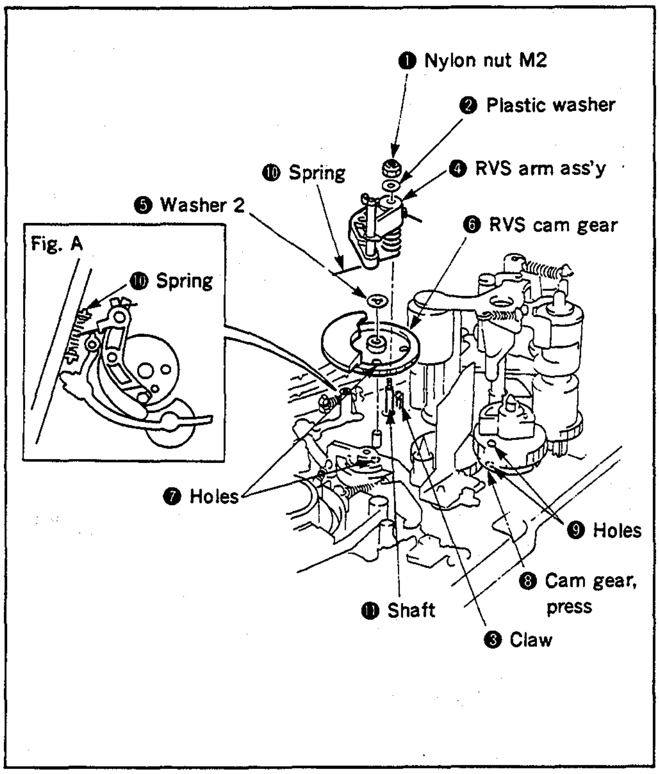

❶ Nylon nut M2
❷ Plastic washer
❿ Spring
❹ RVS arm ass'y
❺ Washer 2
❻ RVS cam gear
Fig. A
❿ Spring
❼ Holes
❾ Holes
❽ Cam gear, press
⓫ Shaft
❸ Claw

Fig. 3-14.

3-9. GUIDE No. 7 (Fig. 3-15)

1) Remove the nylon nut M3 ❶.
2) Pull out guide flange No. 7 ❷, guide sleeve No. 7 ❸, guide flange No. 7 ❹ and compression coil spring ❺ in the given order.

[Precautions on remounting]

- ○ Clean the surface of the guide sleeve No. 7 ❸ where the tape is attached.
- ○ Adjust the height of guide No. 7 to the height shown in Fig. A below.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

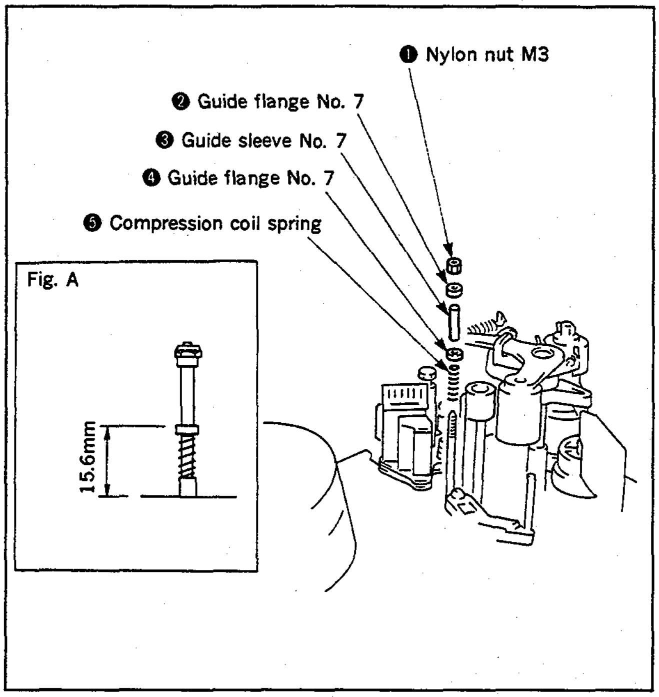

❶ Nylon nut M3
❷ Guide flange No. 7
❸ Guide sleeve No. 7
❹ Guide flange No. 7
❺ Compression coil spring
Fig. A
15.6mm

Fig. 3-15.

3-10. S-BRAKE ASS'Y, T-BRAKE ASS'Y (Fig. 3-16)

1) Remove the spring ❶.
2) Disengage the claw ❷, then pull out the S-brake ass'y ❸.
3) Disengage the claw ❹, then pull out the T-brake ass'y ❺.

[Precautions on remounting]

- ○ Do not touch the brake shoes for the respective S-brake ❸ and T-brake ❺ assy's directly with your fingers.
- ○ Do not hold on to the S-brake ❸ and T-brake ❺ assy's by the arms when inserting them.
- ○ The T-brake ass'y ❺ must be positioned above the S-brake ass'y ❸ as shown in Fig. A below.

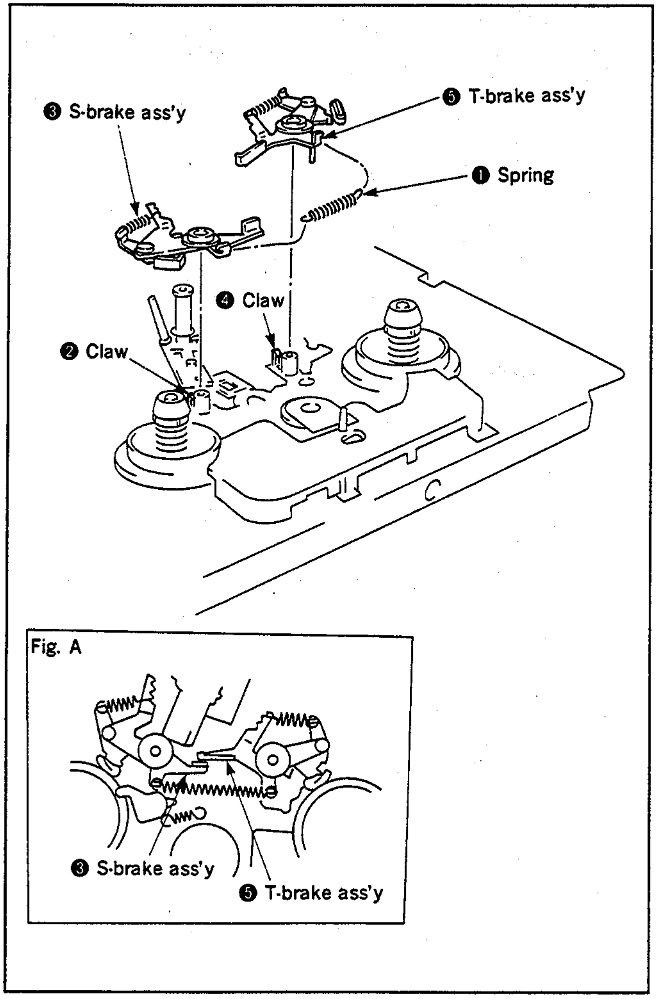

❸ S-brake ass'y
❺ T-brake ass'y
❶ Spring
❹ Claw
❷ Claw
Fig. A
❸ S-brake ass'y
❺ T-brake ass'y

Fig. 3-16.

3-11. T-SOFT BRAKE ASS'Y REV BRAKE ARM (Fig. 3-17)

1) Remove the end of the spring ❶ from the REV brake arm ❷.
2) Remove the end of the spring ❸ from the chassis.
3) Disengage the claw ❹, then pull out the T-soft brake ass'y ❺.
4) Disengage the claw ❻, then pull out the REV brake arm ❷.

[Precautions on remounting]

- ○ Do not touch the brake shoe of the T-soft brake ass'y ❺ directly with your fingers.

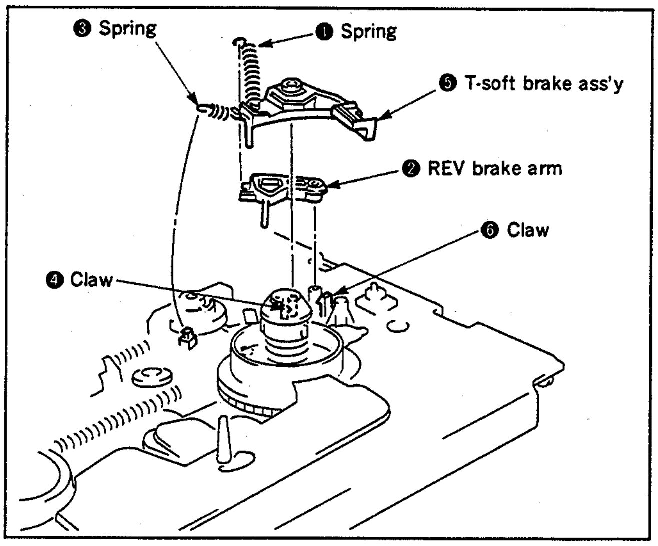

❸ Spring
❶ Spring
❺ T-soft brake ass'y
❷ REV brake arm
❻ Claw
❹ Claw

Fig. 3-17.

3-12. S-SOFT BRAKE ARM ASS'Y (Fig. 3-18)

1) Unhook the end of the spring ❶ from the chassis.
2) Disengage the claw ❷, then pull out the S-soft brake arm ass'y ❸.

[Precautions on remounting]

- ○ The S-soft brake arm ass'y must not clamp down the tension regulator band ass'y ❹ nor be positioned below the tension regulator band ❹.

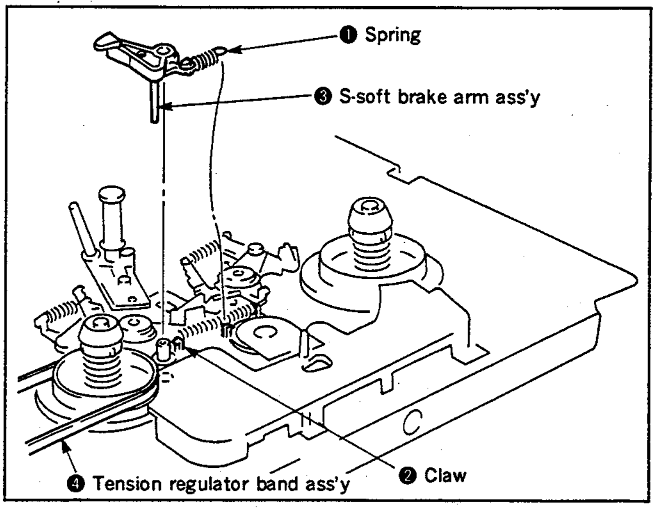

❶ Spring
❸ S-soft brake arm ass'y
❹ Tension regulator band ass'y
❷ Claw

Fig. 3-18.

3-13. S-GUIDE AND T-GUIDE ROLLER ASSY'S (Fig. 3-19)

1) Loosen the setscrew ❶, then remove the S-guide roller ass'y ❷ by turning it in the direction of the arrow Ⓐ.
2) Loosen the setscrew ❸, then remove the T-guide roller ass'y ❹ by turning it in the direction of arrow Ⓑ.

[Precautions on remounting]

○ Clean the surfaces of the S-guide roller ❷ and T-guide roller assy's ❹ where a tape is attached.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

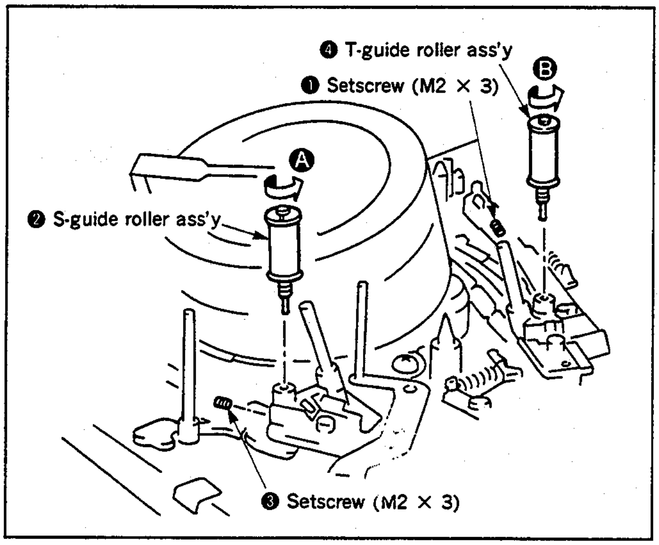

❹ T-guide roller ass'y
❶ Setscrew (M2 × 3)
Ⓑ
Ⓐ
❷ S-guide roller ass'y
❸ Setscrew (M2 × 3)

Fig. 3-19.

3-14. REEL LOCK RELEASE AND REW GEAR (Fig. 3-20)

1) Disengage the two claws ❶, then remove the reel lock release ❷ along with the spring ❸ (while the spring is still attached).
2) Next, pull out the REW gear ❹ with the spring bearing ❺ still attached).

[Precautions on remounting]

○ Make sure that the small thrust bearing ❻ remains attached.

○ Make sure that the two claws ❶ lock the real lock release ❷ in place.

○ Apply 1/2 drop of lubricant to the shaft ❼.

○ Make sure that the spring ❸ adheres to the reel lock release ❷ and that it fits inside the rib of the REW gear ❹.

○ Mount the REW gear ❹ by meshing it with gear ❽.

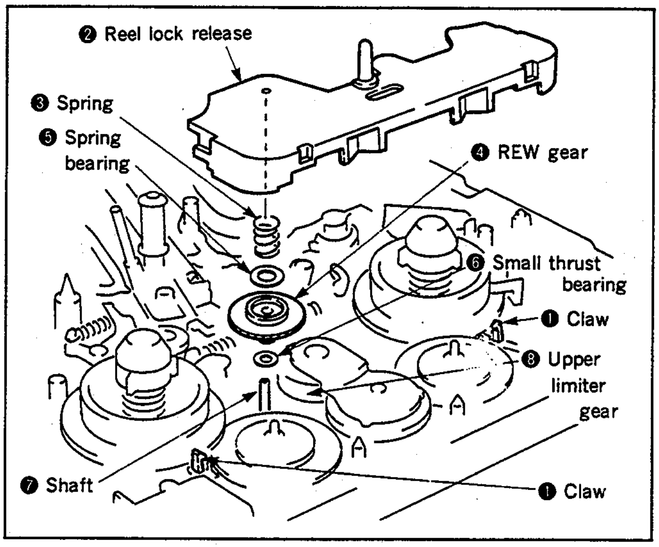

❷ Reel lock release
❸ Spring
❺ Spring bearing
❹ REW gear
❻ Small thrust bearing
❶ Claw
❽ Upper limiter gear
❼ Shaft
❶ Claw

Fig. 3-20.

3-15. TENSION REGULATOR ARM ASS'Y, TENSION REGULATOR BAND ASS'Y (Fig. 3-21)

1) Remove the reel lock release ass'y. (Refer to Fig. 3-14.)
2) Disengage the three claws marked ❶ and the claw marked ❷, then remove the tension regulator band ass'y ❸.
3) Unhook the end of the spring ❹ from the chassis.
4) Disengage the claw ❺, then pull out the tension regulator arm ass'y ❻.

[Precautions on remounting]

- ○ Roll up the tension regulator band ❸ on the S-reel by turning the S-soft brake arm ass'y ❼ in the direction of the arrow.
- ○ Hook the spring ❹ at the center of the spring hook ❽.
- ○ Do not touch the brake shoe of the tension regulator band ass'y ❸ directly with your fingers.
- ○ Mount the tension regulator arm ass'y ❻ at the position shown in Fig. A below.

[Adjustment after replacement]

- ○ Check the back tension. (Refer to 4-1-1.)
- ○ Perform tape path adjustments as described in 4-1.

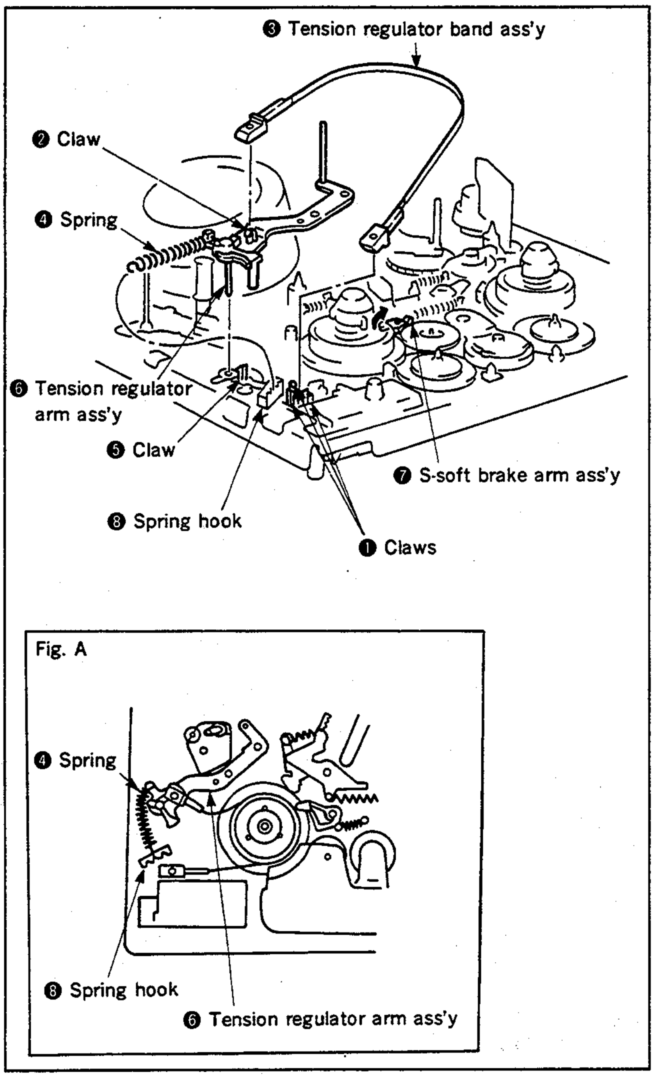

❸ Tension regulator band ass'y
❷ Claw
❹ Spring
❻ Tension regulator arm ass'y
❺ Claw
❼ S-soft brake arm ass'y
❽ Spring hook
❶ Claws
Fig. A
❹ Spring
❽ Spring hook
❻ Tension regulator arm ass'y

Fig. 3-21.

3-16. S TAKE-UP ASS'Y (Fig. 3-22)

1) Remove the tension regulator arm ass'y and the tension regulator band ass'y. (Refer to 3-15.)
2) Unhook the end of the spring ❶ from the S take-up arm ❷.
3) Disengage the two claws ❸, then remove the S take-up ass'y ❹.

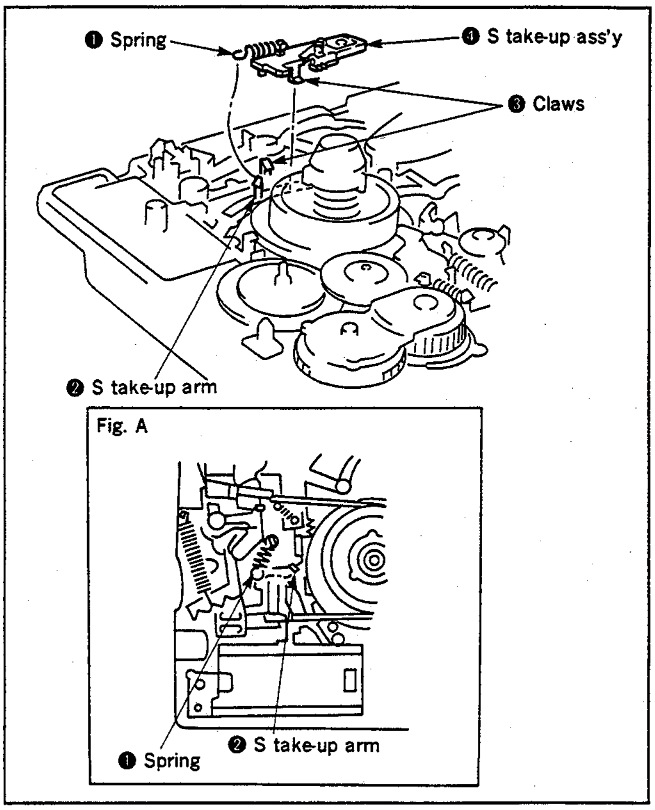

❶ Spring
❹ S take-up ass'y
❸ Claws
❷ S take-up arm
Fig. A
❶ Spring
❷ S take-up arm

Fig. 3-22.

3-17. S-REEL ASS'Y (Fig. 3-23)

1) Remove the S-soft brake arm ass'y. (Refer to 3-12.)
2) Remove the reel lock release. (Refer to 3-14.)
3) Remove the tension regulator band ass'y. (Refer to 3- 15.)
4) Turn the S-brake ass'y ❶ in the direction of the arrow.
5) Pull out the S-reel ass'y ❷.

[Precautions on remounting]

- ○ At least one reel stand thrust bearing ❸ must be attached (but not more than two).
- ○ Do not touch the outer edge of the S-reel ass'y ❷ directly with your fingers.
- ○ Apply 1/2 drop of lubricant over the shaft ❹.
- ○ Mount the S-reel ass'y ❷ while meshing it with the relay gear ❺.

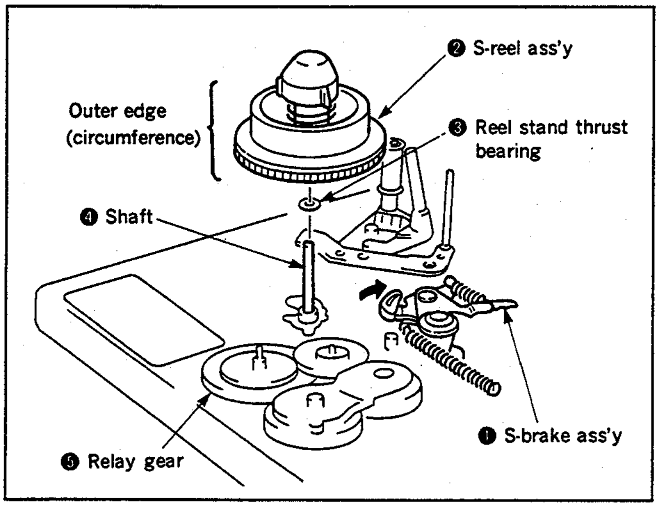

❷ S-reel ass'y
Outer edge (circumference)
❸ Reel stand thrust bearing
❹ Shaft
❶ S-brake ass'y
❺ Relay gear

Fig. 3-23.

3-18. T-REEL ASS'Y (Fig. 3-24)

1) Remove the T-soft brake ass'y. (Refer to 3-11.)
2) Remove the reel lock release ass'y. (Refer to 3-14.)
3) Turn the T-brake ass'y ❶ in the direction of the arrow.
4) Pull out the T-reel ass'y ❷.

[Precautions on remounting]

- ○ At least one reel stand thrust bearing ❸ must be attached (but not more than two).
- ○ Do not touch the outer edge of the T-reel ass'y ❷ directly with your fingers.
- ○ Apply 1/2 drop of lubricant on the shaft ❹.
- ○ Mount the T-reel ass'y ❷ while meshing it with the relay gear ❺.

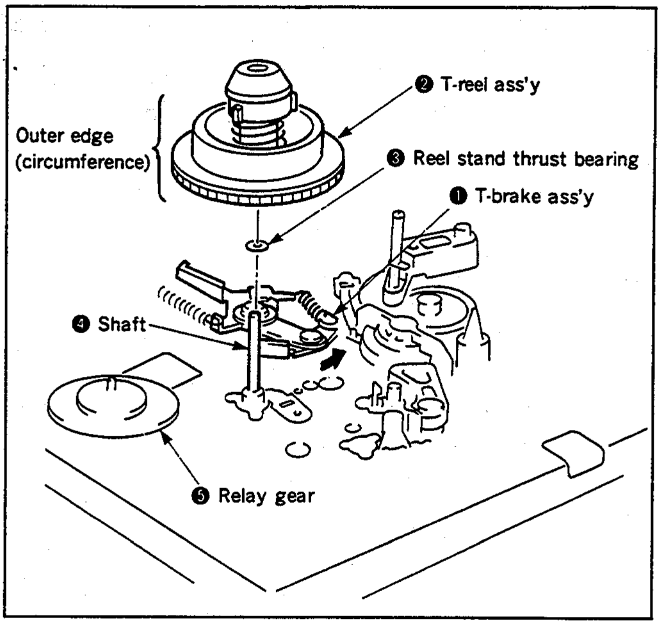

❷ T-reel ass'y
Outer edge (circumference)
❸ Reel stand thrust bearing
❶ T-brake ass'y
❹ Shaft
❺ Relay gear

Fig. 3-24.

3-19. PENDULUM ARM ASS'Y (Fig. 3-25)

1) Remove the reel lock release ass'y. (Refer to 3-14.)
2) Remove the washer 2 ❶, then pull out the pendulum arm ass'y ❷.

[Precautions on remounting]

- ○ Fit the boss on the pendulum cap ❸ into the gap in the pendulum slide plate ❹.
- ○ The plastic slider ❺ must be attzched.
- ○ Apply 1/2 drop of lubricant on the shaft ❻.
- ○ Mount the pendulum arm ass'y ❷ by meshing it with the upper limiter gear ❼.

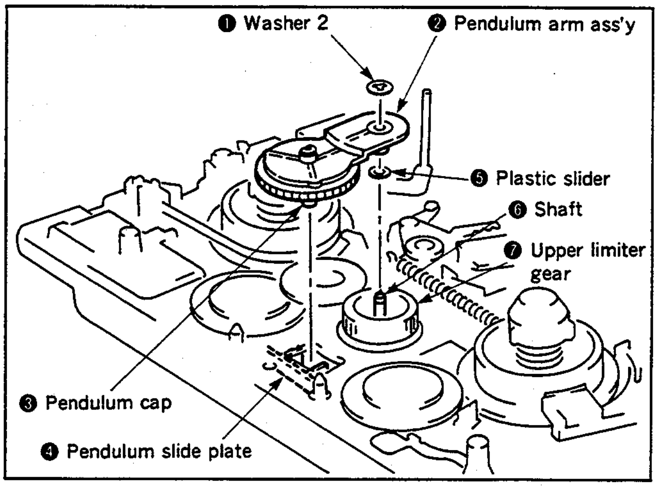

❶ Washer 2
❷ Pendulum arm ass'y
❺ Plastic slider
❻ Shaft
❼ Upper limiter gear
❸ Pendulum cap
❹ Pendulum slide plate

Fig. 3-25.

3-20. RELAY GEAR (Fig. 3-26)

1) Remove the reel lock release and REW gear. (Refer to 3-14.)
2) Remove the S-reel ass'y. (Refer to 3-17.)
3) Remove the T-reel ass'y. (Refer to 3-18).
4) Pull out the two relay gears ❶.

[Precautions on remounting]

○ The relay gears ❶ must rotate smoothly after remounting.

○ Apply 1/2 drop of lubricant to the respective shafts ❷.

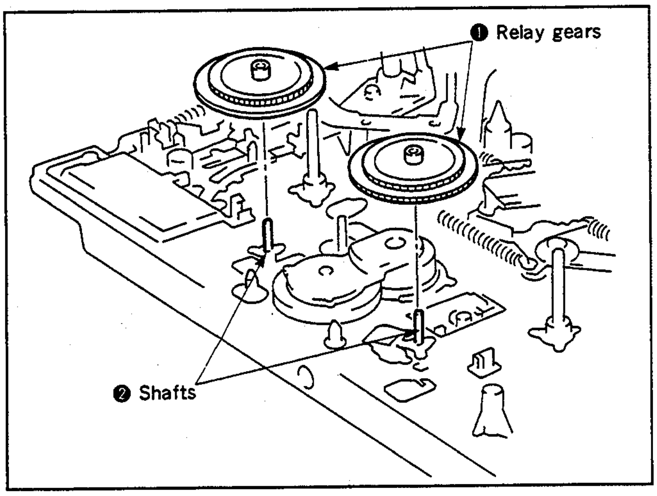

❶ Relay gears
❷ Shafts

Fig. 3-26.

3-21. ADJUSTER ARM ASS'Y (Fig. 3-27)

1) Remove screw ❶.
2) Remove washer ❻.
3) Remove the end of the spring ❷ hooked to the chassis.
4) Remove the end of the timing belt ❸ from the capstan motor arm ass'y.
5) Disengage the claw ❹, then remove the adjuster arm ass'y.

[Precautions on remounting]

○ First mount the adjuster arm ass'y ❺, timing belt ❸ and spring ❷, then attach the washer ❻ and fasten the screw ❶.

○ The screw fastening torque must be within 5kg•cm (±1kg•cm).

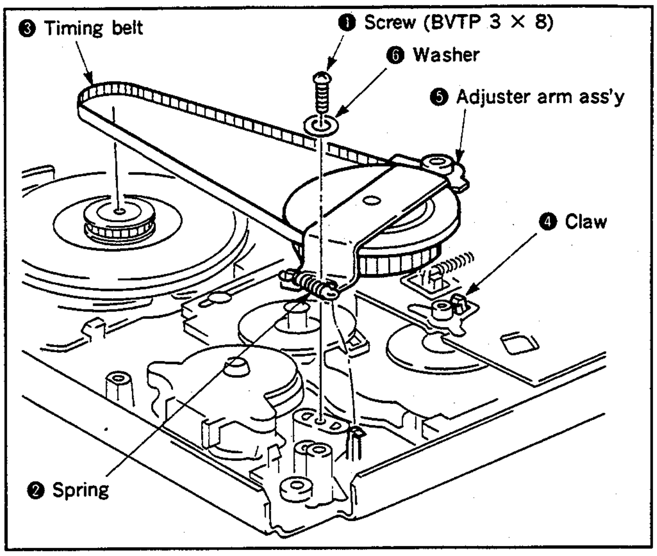

❸ Timing belt
❶ Screw (BVTP 3 × 8)
❻ Washer
❺ Adjuster arm ass'y
❹ Claw
❷ Spring

Fig. 3-27.

3-22. CAP BRAKE ASS'Y (Fig. 3-28)

1) Loosen the screw ❶, then push the timing belt ❷ in the direction of the arrow.
2) Unhook the end of the spring ❸ from the chassis.
3) Disengage claw ❹, then pull out CAP brake ass'y ❺.

[Precautions on remounting]

○ Do not touch the brake shoe of the CAP brake ass'y ❺ directly with your fingers.

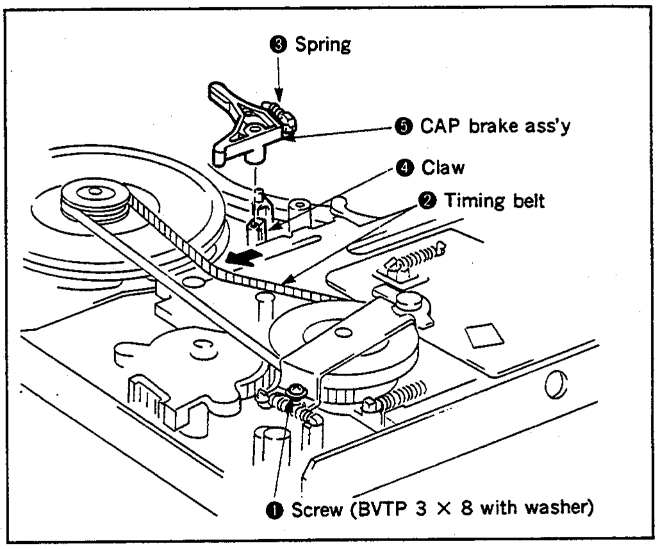

❸ Spring
❺ CAP brake ass'y
❹ Claw
❷ Timing belt
❶ Screw (BVTP 3 × 8 with washer)

Fig. 3-28.

3-23. CAPSTAN MOTOR (Fig. 3-29)

1) Turn the ACE ass'y ❶ in the direction of arrow Ⓐ as shown in Fig. A below, then remove three screws ❷.
2) Remove screw ❸, then remove the rotor clamp ❹.
3) Turn the CAP brake ass'y ❺ in the direction of arrow Ⓑ, then pull out the capstan motor ❻.

[Precautions on remounting]

- ○ Clean the section of the capstan motor ❻ where the tape is attached.
- ○ Do not touch the brake shoe of the CAP brake ass'y ❺ directly with your fingers.
- ○ Of the three screws ❷, first fasten screw A temporarily, then fasten screws B and C firmly, followed by screw A.
- ○ The screw fastening torque must be within 3kg•cm ± 1kg•cm.

[Adjustments after mounting]

- ○ Perform tape path adjustments as described in 4-1.

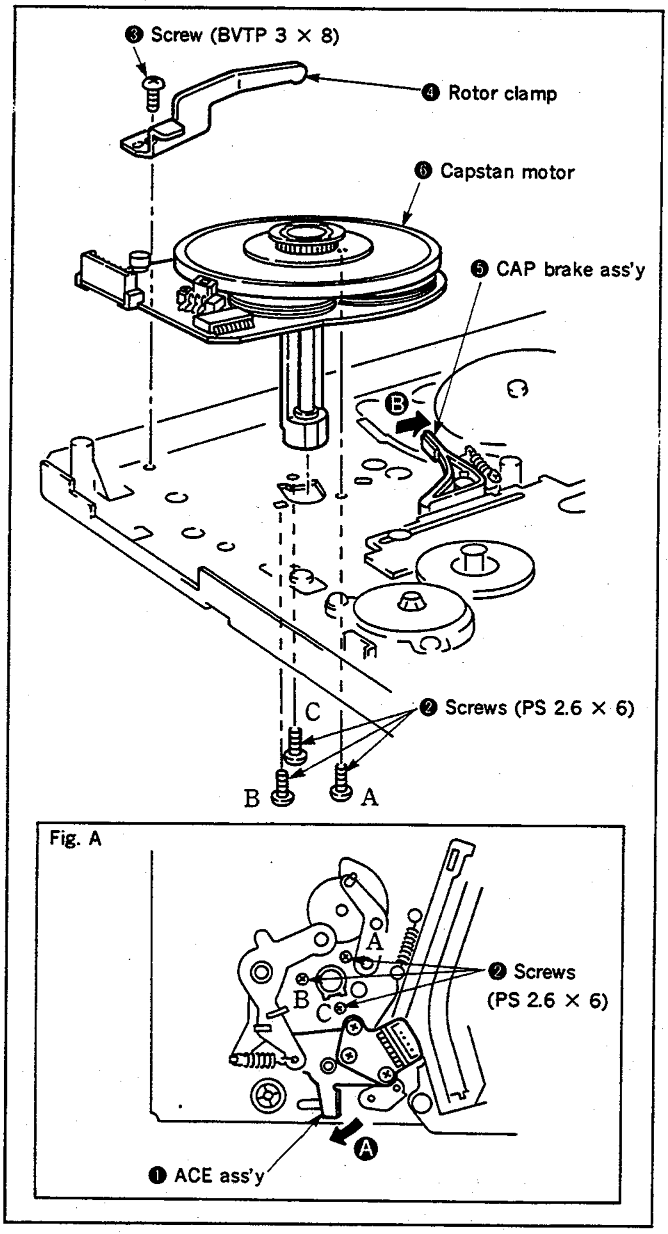

❸ Screw (BVTP 3 × 8)
❹ Rotor clamp
❻ Capstan motor
❺ CAP brake ass'y
Ⓑ
❷ Screws (PS 2.6 × 6)
C
B
A
Fig. A
A
B
C
❷ Screws
(PS 2.6 × 6)
❶ ACE ass'y
Ⓐ

Fig. 3-29.

3-24. ROTARY SWITCH (Fig. 3-30)

1) Remove the adjuster arm ass'y. (Refer to 3-21.)
2) Remove the screws ❶ and ❷, then pull out the rotary switch ❸.

[Precautions on remounting]

- ○ Match up the ● mark on the rotary switch ❸ with the ▲ mark on the RKB cam gear ❹ as shown in Fig. A.
- ○ Match up holes ❻ on the pendulum arm ❺ and the chassis.

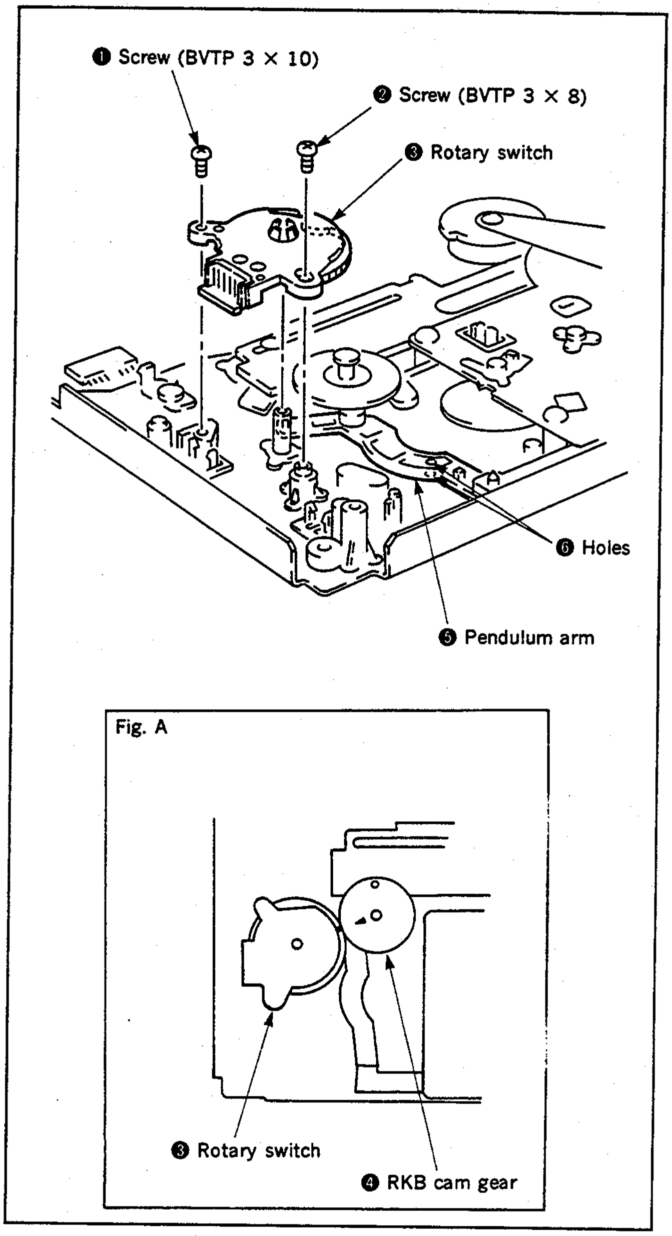

❶ Screw (BVTP 3 × 10)
❷ Screw (BVTP 3 × 8)
❸ Rotary switch
❻ Holes
❺ Pendulum arm
Fig. A
❸ Rotary switch
❹ RKB cam gear

Fig. 3-30.

3-25. RKB CAM GEAR (Fig. 3-31)

1) Remove the adjuster arm ass'y. (Refer to 3-22.)
2) Remove washer 2 ❶, then pull out the RKB cam gear ❷.

[Precautions on remounting]

- ○ When the limiter arm ❸ is pushed in the direction of the arrow, the pin must fit into the notch on the RKB cam gear ❷.
- ○ The ■ mark on rotary switch ❺ must match up with the ◀ mark on the RKB cam gear ❷ as shown in Fig. A.
- ○ Apply 1/2 drop of lubricant to shaft ❻.
- ○ Match up the holes ❹ on the RKB cam gear ❷ and the mode slide plate.

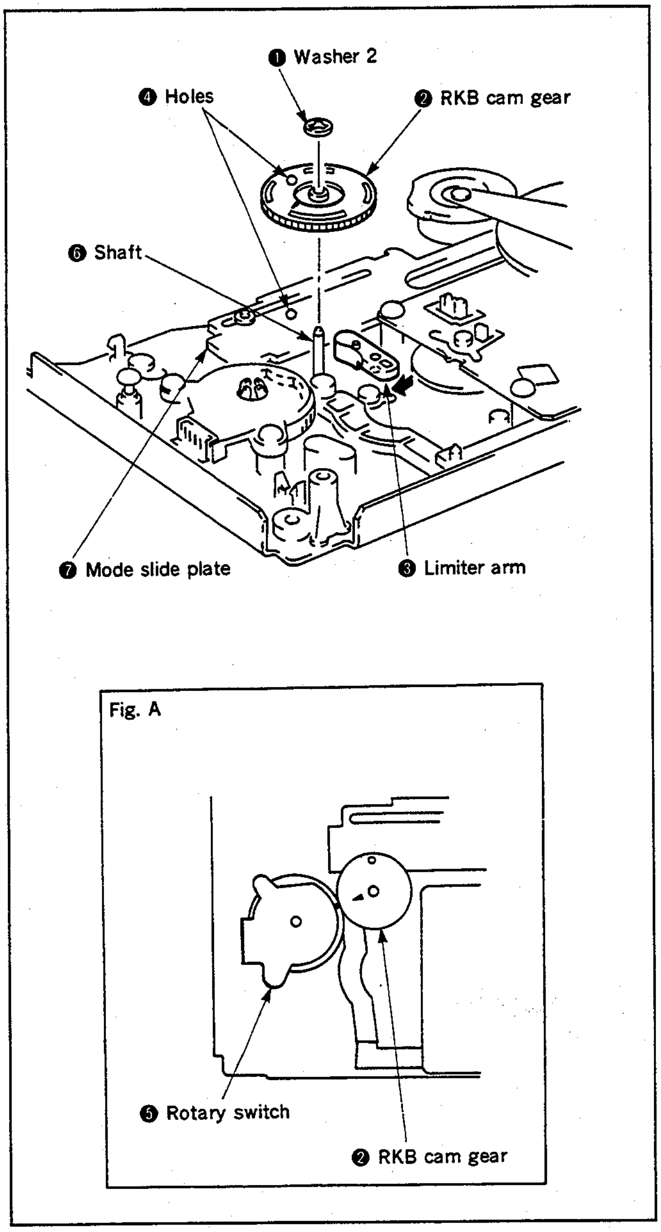

❶ Washer 2
❹ Holes
❷ RKB cam gear
❻ Shaft
❼ Mode slide plate
❸ Limiter arm
Fig. A
❺ Rotary switch
❷ RKB cam gear

Fig. 3-31.

3-26. SUB-CHASSIS ASS'Y (Fig. 3-32)

1) Remove the reel lock release arm and REW gear. (Refer to 3-15.)
2) Remove the pendulum arm ass'y. (Refer to 3-19.)
3) Remove the adjuster arm ass'y. (Refer to 3-22.)
4) Remove the three screws ❶, then remove sub-chassis ass'y ❷.

[Precautions on remounting]

- ○ The switching arm ❸ must be switched in the direction of the arrow.
- ○ The screws must be fastened in order of a, b and c.
- ○ Mount the sub-chassis carefully so as not to damage the gear.
- ○ The corner edge of the lug terminal ❹ must fit into the gap between the chassis ass'y ❷ and mechanism chassis.

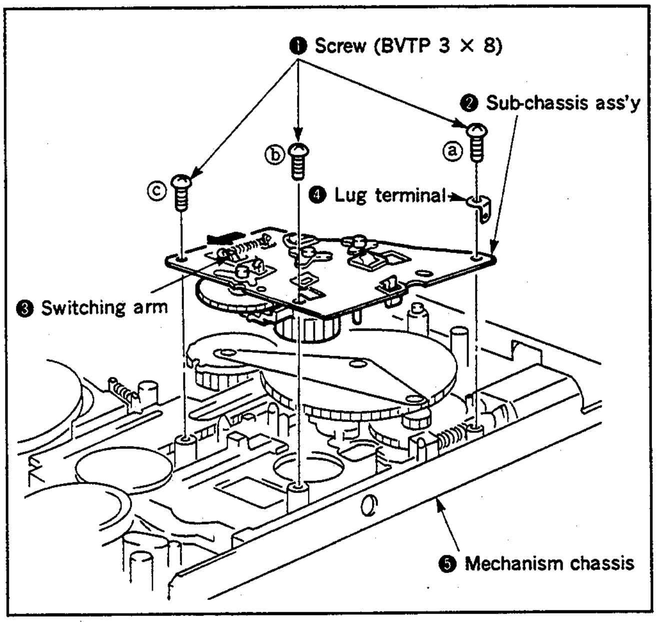

❶ Screw (BVTP 3 × 8)
❷ Sub-chassis ass'y
ⓑ
ⓐ
ⓒ
❹ Lug terminal
❸ Switching arm
❺ Mechanism chassis

Fig. 3-32.

3-27. PENDULUM SLIDE PLATE, PENDULUM ARM (Fig. 3-33)

1) Remove the rotary switch. (Refer to 3-24.)
2) Remove the RKB cam gear. (Refer to 3-25.)
3) Remove the sub-chassis ass'y. (Refer to 3-26.)
4) Disengage the two claws ❶, then pull out the pendulum slide plate ❷.
5) Unhook the spring ❸.
6) Disengage the claw ❹, then pull out pendulum arm ❺.

[Precautions on remounting]

○ The shaft ❻ must fit into hole ❼.

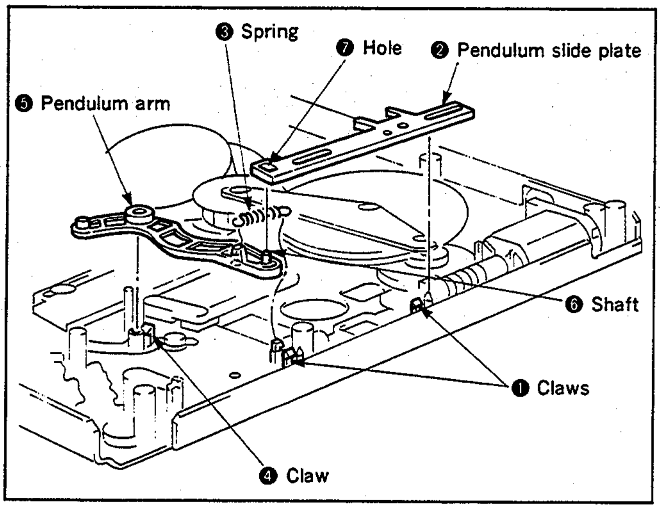

❸ Spring
❼ Hole
❷ Pendulum slide plate
❺ Pendulum arm
❻ Shaft
❶ Claws
❹ Claw

Fig. 3-33.

3-28. THE LIMITER ARM AND LIMITER SLIDE PLATE (Fig, 3-24)

1) Remove the RKB cam gear. (Refer to 3-25.)
2) Remove the sub-chassis. (Refer to Fig. 3-26.)
3) Disengage the claw ❶, then pull out the limiter arm ❷.
4) Disengage the two claws ❸, then pull out the limiter slide plate ❹.

[Precautions on remounting]

○ The shaft ❺ must fit into the hole ❻.

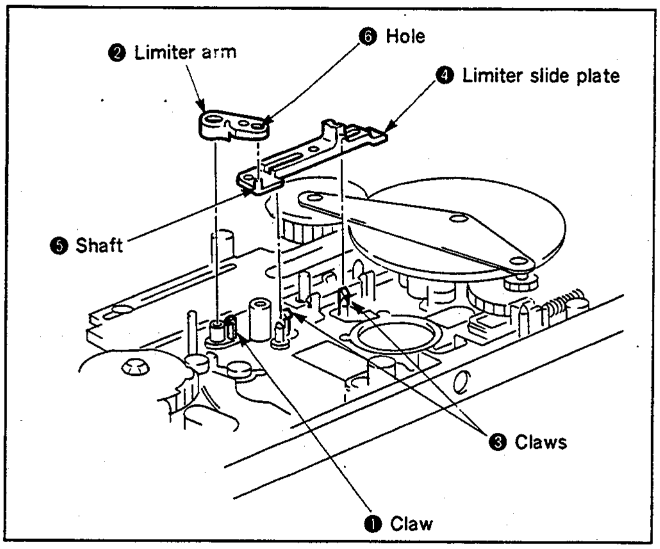

❻ Hole
❷ Limiter arm
❹ Limiter slide plate
❺ Shaft
❸ Claws
❶ Claw

Fig. 3-34.

3-29. CAM MOTOR (Fig. 3-35)

1) Remove the sub- chassis ass'y. (Refer to 3-26.)
2) Disengage the six claws ❶, then remove the cam motor ❷ and worm gear ❸.

[Precautions on remounting]

○ Check the meshing of cam motor ❷ and worm gear ❸.

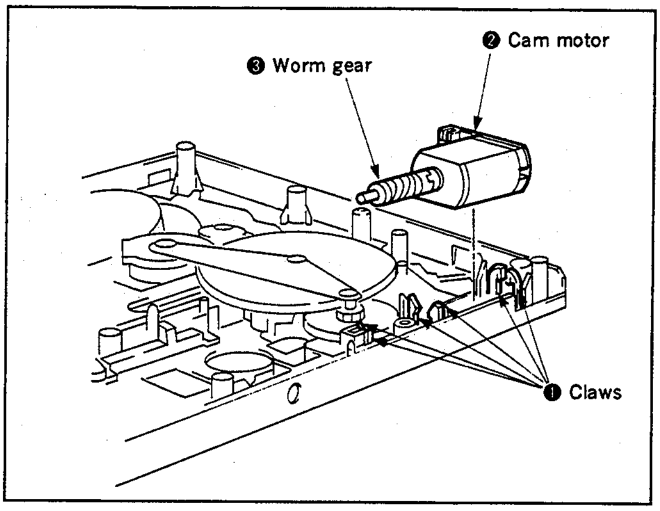

❷ Cam motor
❸ Worm gear
❶ Claws

Fig. 3-35.

3-30. CAM GEAR (Fig. 3-36)

1) Remove the three washers 2 ❶, then pull out the cam gear holder ❷.
2) Pull out the cam gear ❸.

[Precautions on remounting]

○ Match up the right loading gear ass'y, the tension regulator arm, the S take-up arm, the work wheel, the brake arm and the mode slide plate with respective holes ❹ to ❾ on the chassis in that order.

○ Match up the hole ❿ on the mode slide plate with the hole ❿ in cam gear ❸.

○ Apply 1/2 drop of lubricant to the shaft ⓫.

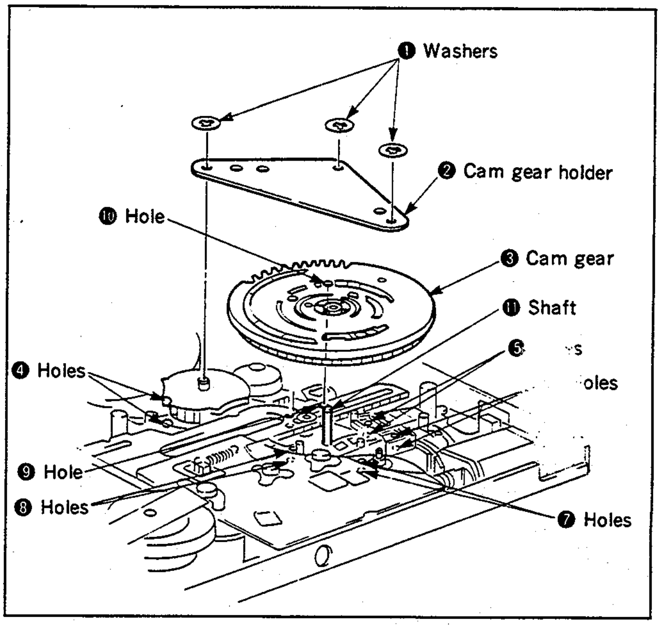

❶ Washers
❷ Cam gear holder
❿ Hole
❸ Cam gear
⓫ Shaft
❺ s
oles
❹ Holes
❾ Hole
❽ Holes
❼ Holes

Fig. 3-36.

3-31. TENSION REGULATOR ARM, S TAKE-UP ARM (Fig. 3-37)

1) Remove the cam gear. (Refer to 3-30)
2) Disengage the claw ❶, then remove the tension regulator arm ❷.
3) Remove the end of the spring ❸ from the S take-up arm ❹.
4) Disengage the claw ❺, then pull out S take-up arm ❹.

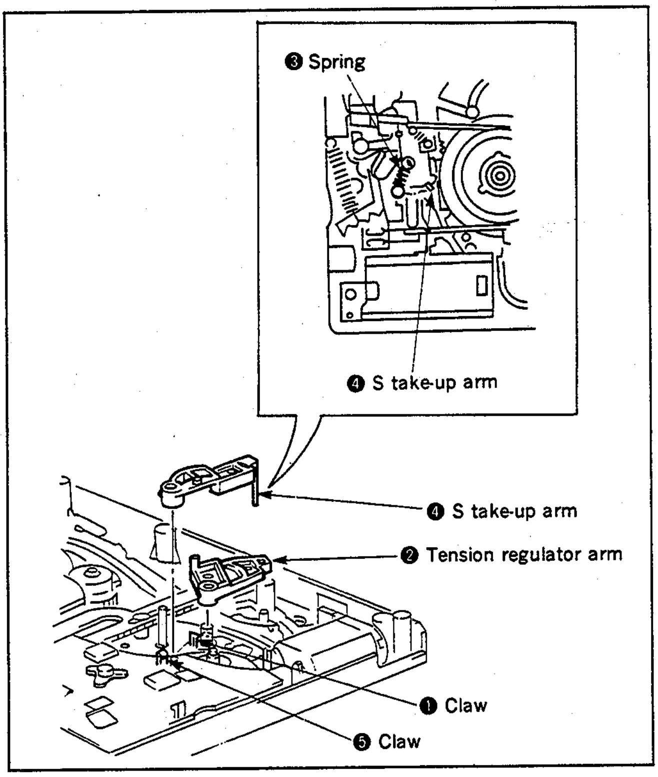

❸ Spring
❹ S take-up arm
❹ S take-up arm
❷ Tension regulator arm
❶ Claw
❺ Claw

Fig. 3-37.

3-32. MODE SLIDE PLATE, RVS RELAY GEAR (Fig. 3-38)

1) Remove the RKB cam gear. (Refer to 3-25.)
2) Remove the cam gear. (Refer to 3-30.)
3) Remove the two washers 2 ❶.
4) Turn the CAP brake ❷ in the direction of the arrow, then pull out mode slide plate ❸.
5) Pull out the RVS relay gear ❹.

[Precautions on remounting]

○ Match up the hole ❺ on the RVS relay gear ❹ with hole ❺ in the chassis.

○ Match up the holes ❻ on the mode slide plate ❸ with holes ❻ in the chassis.

○ Apply 1/2 drop of lubricant to the shaft ❼.

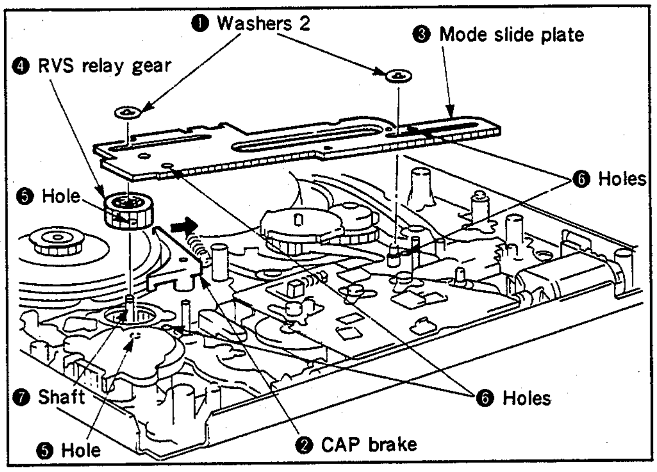

❶ Washers 2
❸ Mode slide plate
❹ RVS relay gear
❻ Holes
❺ Hole
❼ Shaft
❻ Holes
❺ Hole
❷ CAP brake

Fig. 3-38.

3-33. BRAKE ARM, BRAKE SLIDE PLATE (Fig. 3-39)

1) Remove the sub-chassis. (Refer to 3-26.)
2) Remove the cam gear. (Refer to 3-30.)
3) Disengage the claw ❶, then pull out the brake arm ❷.
4) Disengage the two claws ❸, then pull out the brake slide plate ❹.

[Precautions on remounting]

○ Insert the shaft ❺ into hole ❻.

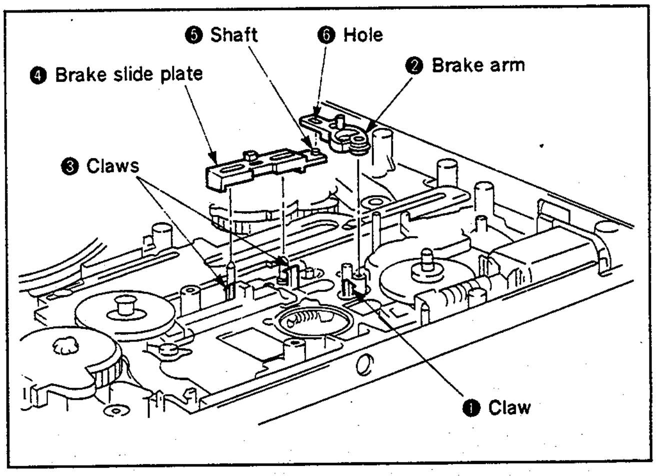

❺ Shaft
❻ Hole
❹ Brake slide plate
❷ Brake arm
❸ Claws
❶ Claw

Fig. 3-39.

3-34. RIGHT SHUTTLE, RIGHT LOADING GEAR ASSY'S (Fig. 3-40)

1) Remove the mode slide plate. (Refer to 3-32.)
2) Remove the plastic slider ❶, then pull out the right shuttle ass'y ❷.
3) Pull out the right loading gear ass'y ❸.

[Precautions on remounting]

○ Match up the ▲ mark on the right loading gear ass'y ❸ with the ▲ mark on the left loading gear ass'y ❹ as shown in Fig. A below.
○ Apply 1/2 drop of lubricant to the shaft ❺.
○ Do not hold on to the arm when pressing on the right loading gear ❸.
○ Clean the section of the right shuttle ass'y ❷ where the tape is attached.

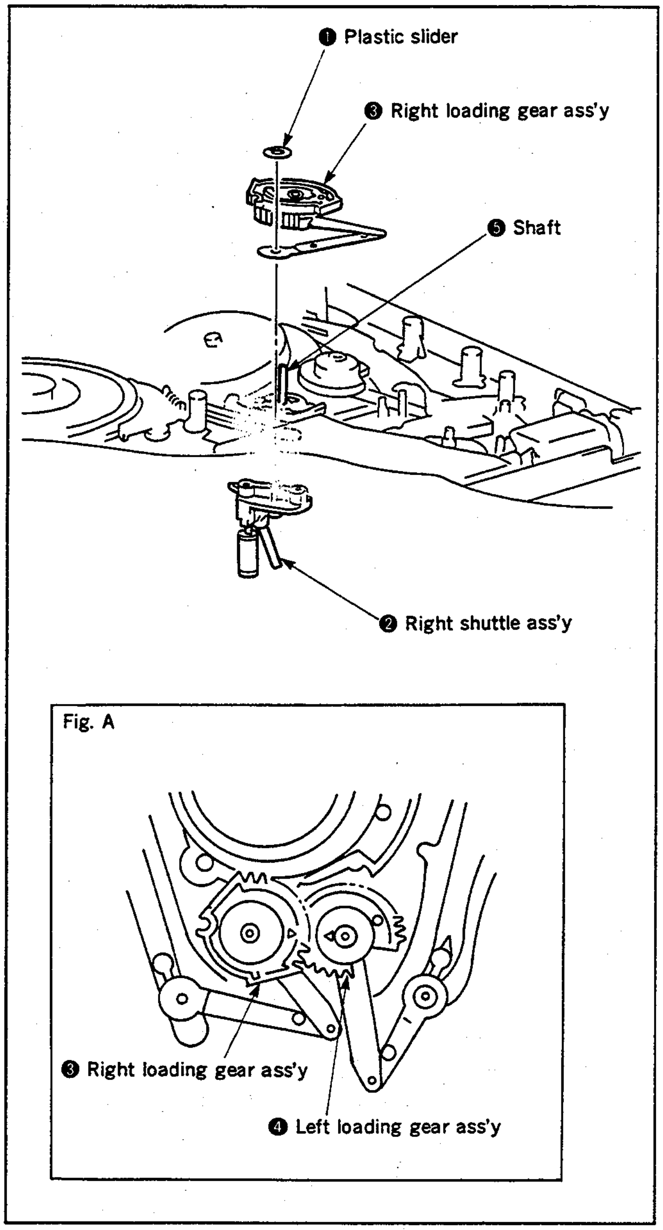

❶ Plastic slider
❸ Right loading gear ass'y
❺ Shaft
❷ Right shuttle ass'y
Fig. A
❸ Right loading gear ass'y
❹ Left loading gear ass'y

Fig. 3-40.

3-35. LEFT SHUTTLE ASS'Y, LEFT LOADING GEAR ASS'Y (Fig. 3-41)

1) Remove the right shuttle ass'y and right loading gear ass'y. (Refer to 3-34.)
2) Remove the plastic slider ❶, then pull out the left shuttle ass'y ❷.
3) Remove washer 2 ❸, then pull out the left loading gear ass'y ❹.

[Precautions on remounting]

○ Apply 1/2 drop of lubricant to shaft ❺.
○ The tension regulator arm ass'y ❻ and left shuttle ass'y ❷ must be positioned as shown in Fig. A below.
○ Do not hold on to the arm of the left loading gear ass'y ❹ when the left loading gear ass'y ❹ is pressed.
○ Clean the section of the felt shuttle ass'y ❷ where the tape is attached.

[Adjustments after replacement]

○ Perform tape path adjustments as described in 4-1.

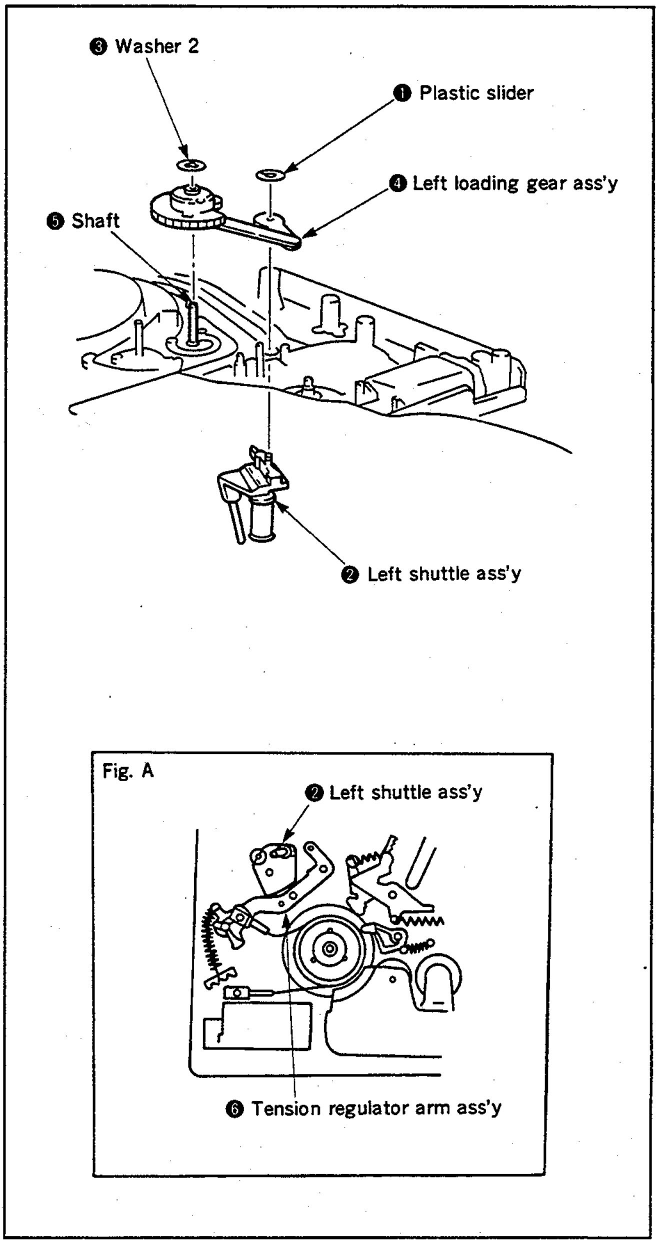

❸ Washer 2
❶ Plastic slider
❹ Left loading gear ass'y
❺ Shaft
❷ Left shuttle ass'y
Fig. A
❷ Left shuttle ass'y
❻ Tension regulator arm ass'y

Fig. 3-41.

3-36. C-ROLLER ARM ASS'Y, C-ROLLER RELEASE LEVER (Fig. 3-42)

1) Disengage the claw ❶, then pull out the C-roller arm ass'y ❷.
2) Unhook the end of the spring ❸ from the chassis.
3) Disengage the two claws ❹, then pull out the C-roller release lever ❺.

[Precautions on remounting]

○ Mount C-roller arm ass'y ❷ so that the hole ❻ on the C-roller arm ass'y ❷ fits into the boss ❼ on the C-roller release lever ❺.

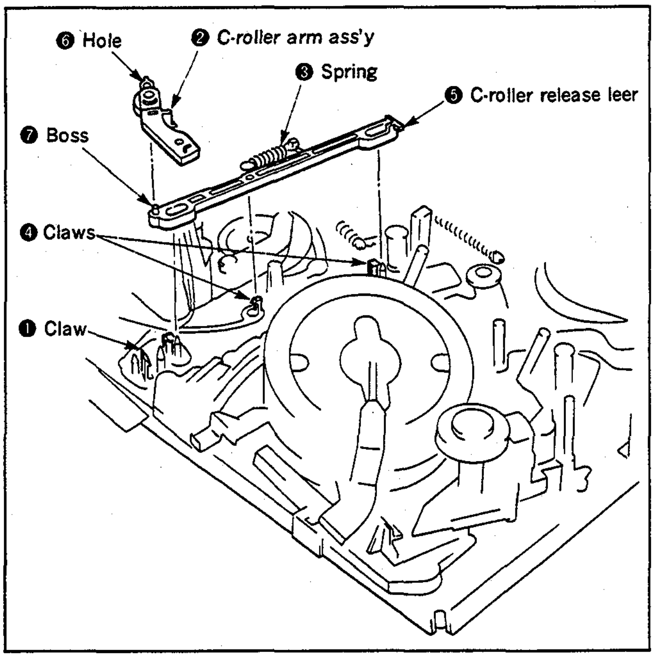

❻ Hole
❷ C-roller arm ass'y
❸ Spring
❺ C-roller release leer
❼ Boss
❹ Claws
❶ Claw

Fig. 3-42.

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads. Each component part of the tape transport system, particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted. when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. Tension regulator position/tension adjustment (Fig. 4-1.)

Purpose: Stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

- **Position adjustment**

Mode	Threading is completed without a cassette loaded. (Refer to section 1-2.)
Adjustment locations	Tension band holder

[Adjustment method]

1) Allow the unit to go through the threading procedure without a cassette loaded.
2) Set the VTR unit to playback, then turn the tension band adjuster lever so that the gap between guide No. 0 and tension arm is within 4.5±0.4mm. *(Set the unit to playback without a cassette loaded.)
3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

- **Tension adjustment**

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specification	28 to 34 g•cm

[Adjustment method]

1) Playback the torque cassette.
2) Check that the center value deviation reading on the torque cassette meets with the standards.
3) When the reading is higher than the standards: Move the spring toward direction Ⓐ.
When the reading is less than the standards: Move the spring toward direction Ⓑ.

Note: Move the spring to the tension spring hook position and recheck the tension arm position. If the arm position is misaligned, adjust the position and tension of the tension arm.

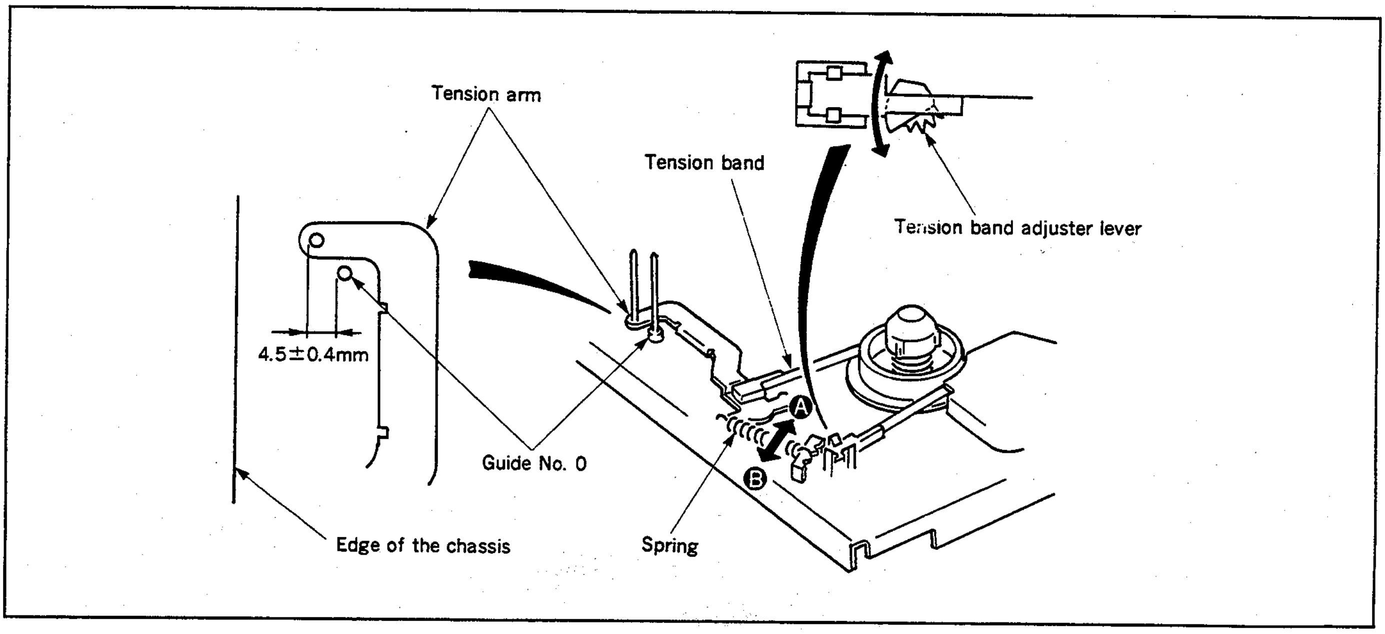


Fig. 4-1.

4-1-2. Height adjustment of the guide roller No. 2 (Fig. 4-2)

Mode	Playback
Tool	Blank tape
Adjustment locations	Guide roller height adjuster screw

[Adjustment method]

1) Load a new tape in the unit, then play it back.
2) Make sure that the lower flange of guide roller No. 2 does not curl up.
3) When the tape curls up: Turn the guide roller adjuster screw clockwise.
   When the tape does not fit into the lower flange: Turn the guide roller adjuster screw counter-clockwise.
4) After the above check, separate the tension arm from the tape, then re-attach it slowly. At this time, check if the tape curls up at the lower flange of the guide roller No. 2 and if the curl disappears within 2 seconds.
5) If curl does not disappear in two seconds: Turn the adjuster screw clockwise.
   If the tape does not curl up: Turn the adjuster screw counter-clockwise.

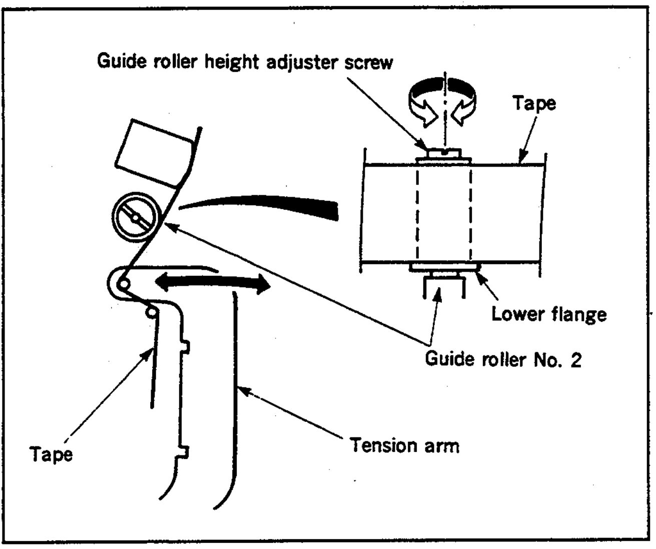


Fig. 4-2.

4-1-3. Height adjustment of guide roller No. 7 and the RVS arm (Fig. 4-3.)

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut

[Adjustment method]

1) Load the tape into the VTR and play it back, then adjust the height of the guide roller No. 7 so that the tape runs along the lower flange of guide roller No. 7.
2) If the guide roller is too low: Turn the height adjuster nut counter-clockwise.
   If the guide roller is too high: Turn the height adjuster nut clockwise.
3) Run the tape in REV, then adjust the height of the RVS arm so that the tape runs along guide roller No. 7.
4) If the tape gets caught in the upper flange of guide roller No. 7: Turn the RVS arm height adjuster nut clockwise.
5) If the tape catches on the lower flange of guide roller No. 7 : Turn the RVS arm height adjuster nut counter-clockwise.

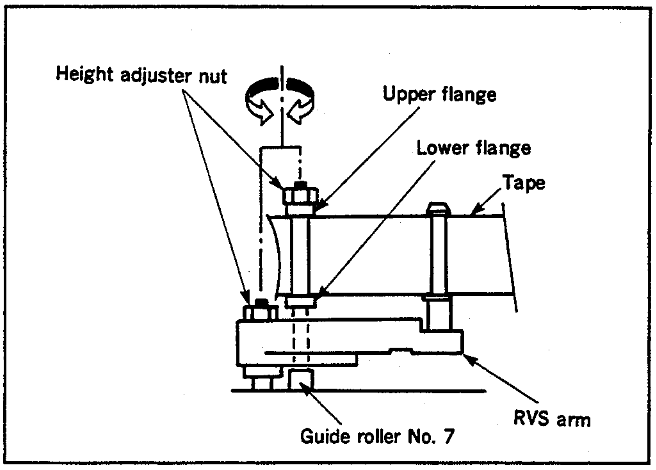


Fig. 4-3.

4-1-4. Height adjustment of guide rollers No. 3 and No. 6 (Fig. 4-4)

Mode	Playback
Signal	Hi-Fi alignment tape (Hi-Fi 400Hz)
Measuring instrument	Oscilloscope
Measuring point	CH-1 : Connector PB RF pin for RF PC board check. CH-2 : Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller height adjuster screw.

[Adjustment method]

1) Tracking (playback) : Turn off the auto tracking, then press the tracking buttons ▽ and △ simultaneously to set the tracking at the center position.
   (If adjustment is made after the drum is replaced, the tracking must be set at the max. Rf output position.)
2) Height adjuster screw: Even out the RF output waveforms.
3) Press the tracking buttons (playback), ▽ and △ alternately.
4) Check that RF output drops the same amount at the front and rear edges.

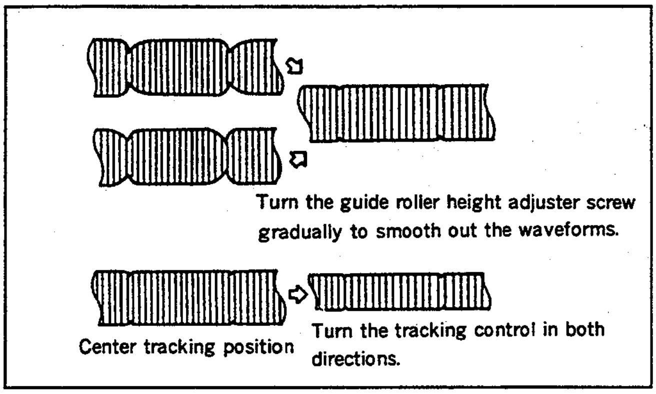

Turn the guide roller height adjuster screw gradually to smooth out the waveforms.
Center tracking position
Turn the tracking control in both directions.

Fig. 4-4.

4-1-5. ACE head ass'y adjustment (rough adjustment) (Figs. 4-5 and 4-6)

Purpose : Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut, tilt adjuster screw

[Adjustment method]

1) Mount the ACE head ass'y. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
2) Remove the adjustment tool and load a new tape, then set the unit for playback.
3) Check that the tape does not curl or raise up noticeably near the ACE head.
4) If the yape curls up or rarises noticeably, readjust the tilt adjuster screw, the azimuth adjuster screw and the height adjuster nut.
   (The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
5) Perform precision adjustment.

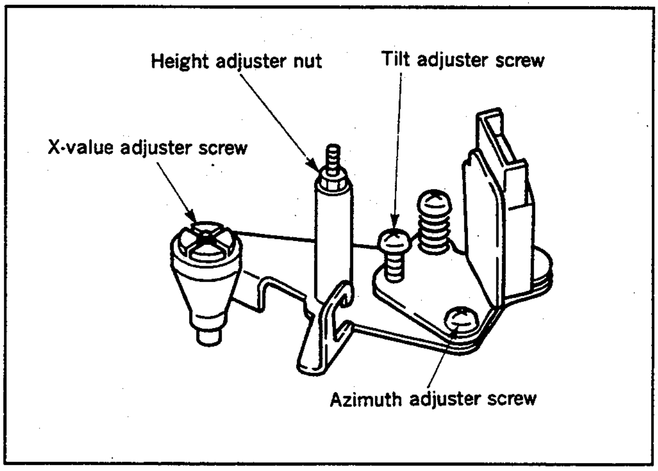

Height adjuster nut
Tilt adjuster screw
X-value adjuster screw
Azimuth adjuster screw

Fig. 4-5.

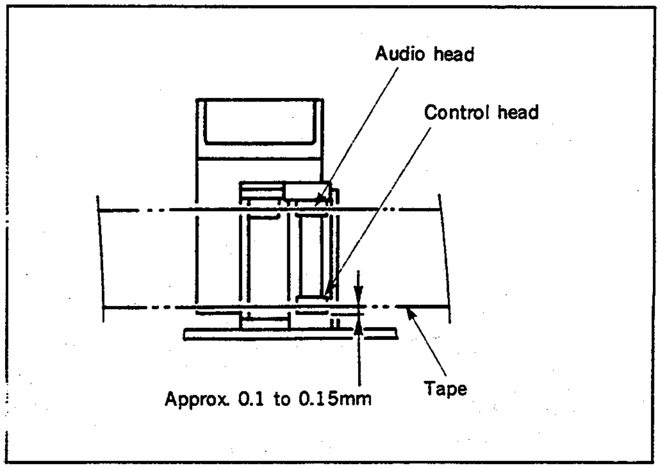

Audio head
Control head
Approx. 0.1 to 0.15mm
Tape

Fig. 4-6.

4-1-6. ACE head assembly adjustment (precision adjustment)

Mode	Playback
Signal	Alignment tape (JVC-MH-1 1KHz)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw Height adjuster nut Tilt adjuster screw

[Adjustment method]

1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or raise.
2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

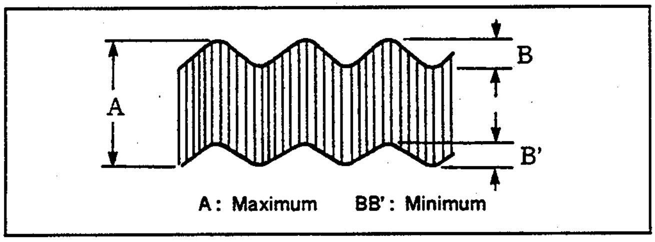

A
B
B'
A: Maximum BB': Minimum

Fig. 4-7.

4-1-7. X-value adjustment

Purpose: To obtain compatibility with other VTR.

Precaution: Be sure to perform the preset tracking adjustment before perform this adjustment. (Refer to the Service Guide.)
Turn off the auto tracking and set the VTR for manual tracking mode.

Mode	Playbadk
Signal	Hi-Fi alignment tape (Hi-Fi 400Hz), alignment tape (JVC-MH-1)
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check. (Check with the CHA head)
Adjustment locations	X-value adjuster screw

[Adjustment method]

- **Adjustment by Hi-Fi alignment tape**

When the tracking is set at the center position (by pressing the ▽ and △ keys simultaneously), adjust the RF output to maximum.

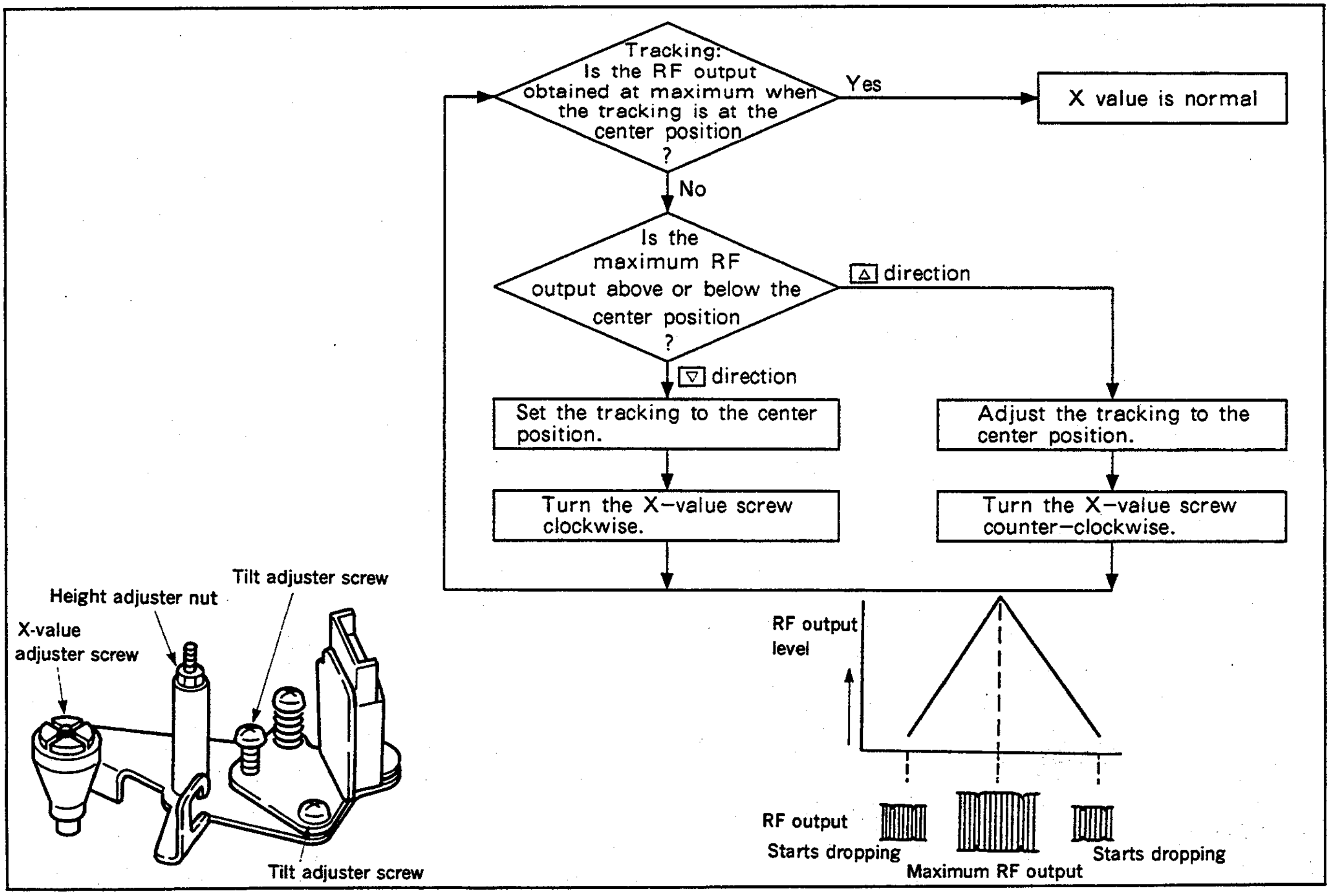
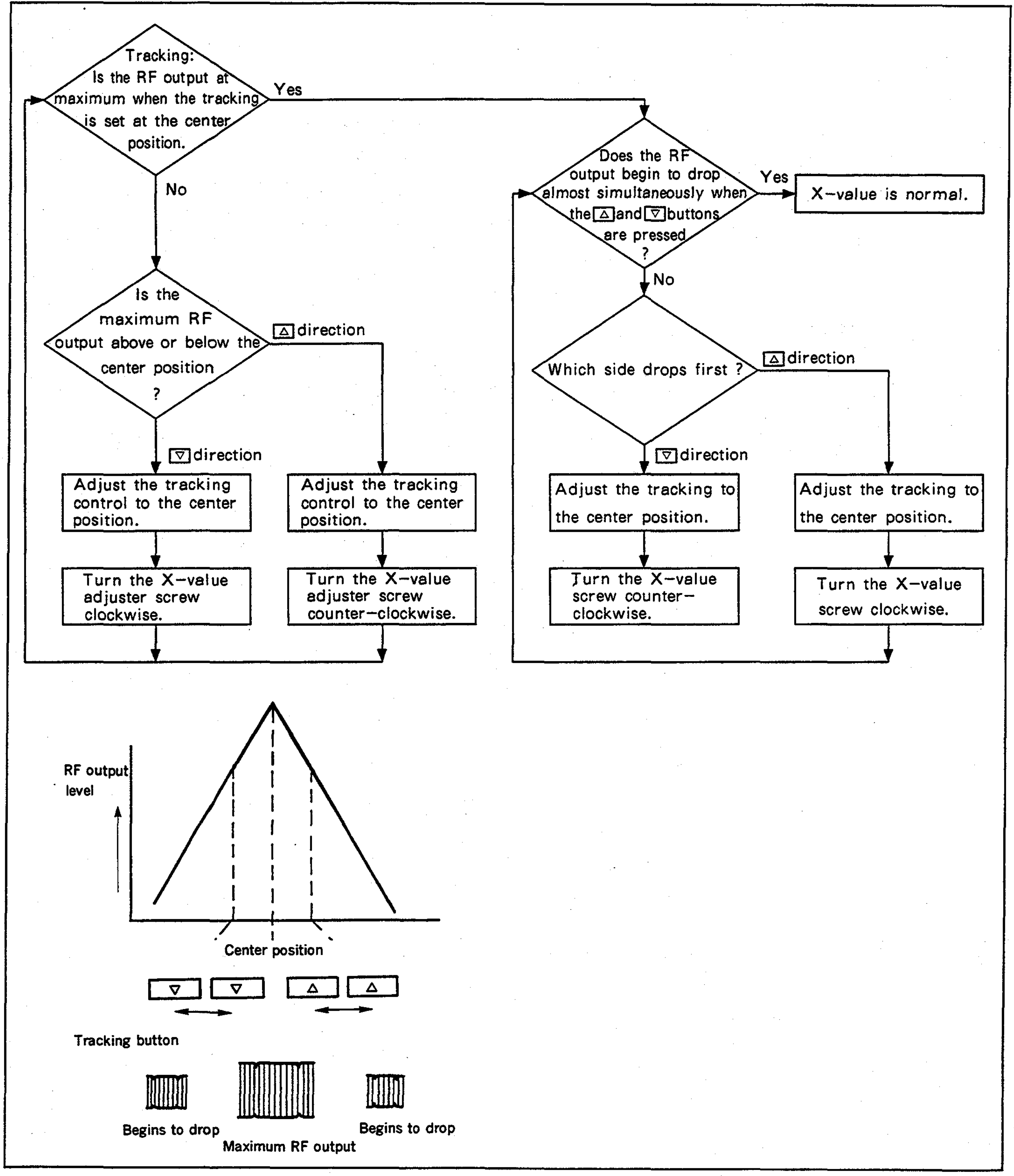

Tracking: Is the RF output obtained at maximum when the tracking is at the center position ?
Yes
X value is normal
No
Is the maximum RF output above or below the center position ?
△ direction
▽ direction
Set the tracking to the center position.
Turn the X-value screw clockwise.
Adjust the tracking to the center position.
Turn the X-value screw counter-clockwise.
Tilt adjuster screw
Height adjuster nut
X-value adjuster screw
Tilt adjuster screw
RF output level
RF output
Starts dropping
Maximum RF output
Starts dropping

Fig. 4-8.

- **Adjustment by Alignment tape (JVC-MH-1)**
  Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and △ buttons while the tracking is set at the center position.



Tracking: Is the RF output at maximum when the tracking is set at the center position.
Yes
No
Is the maximum RF output above or below the center position ?
△ direction
▽ direction
Adjust the tracking control to the center position.
Turn the X-value adjuster screw clockwise.
Adjust the tracking control to the center position.
Turn the X-value adjuster screw counter-clockwise.
Does the RF output begin to drop almost simultaneously when the △ and ▽ buttons are pressed ?
Yes
X-value is normal.
No
Which side drops first ?
△ direction
▽ direction
Adjust the tracking to the center position.
Turn the X-value screw counter-clockwise.
Adjust the tracking to the center position.
Turn the X-value screw clockwise.
RF output level
Center position
▽
▽
△
△
Tracking button
Begins to drop
Maximum RF output
Begins to drop

Fig. 4-9.

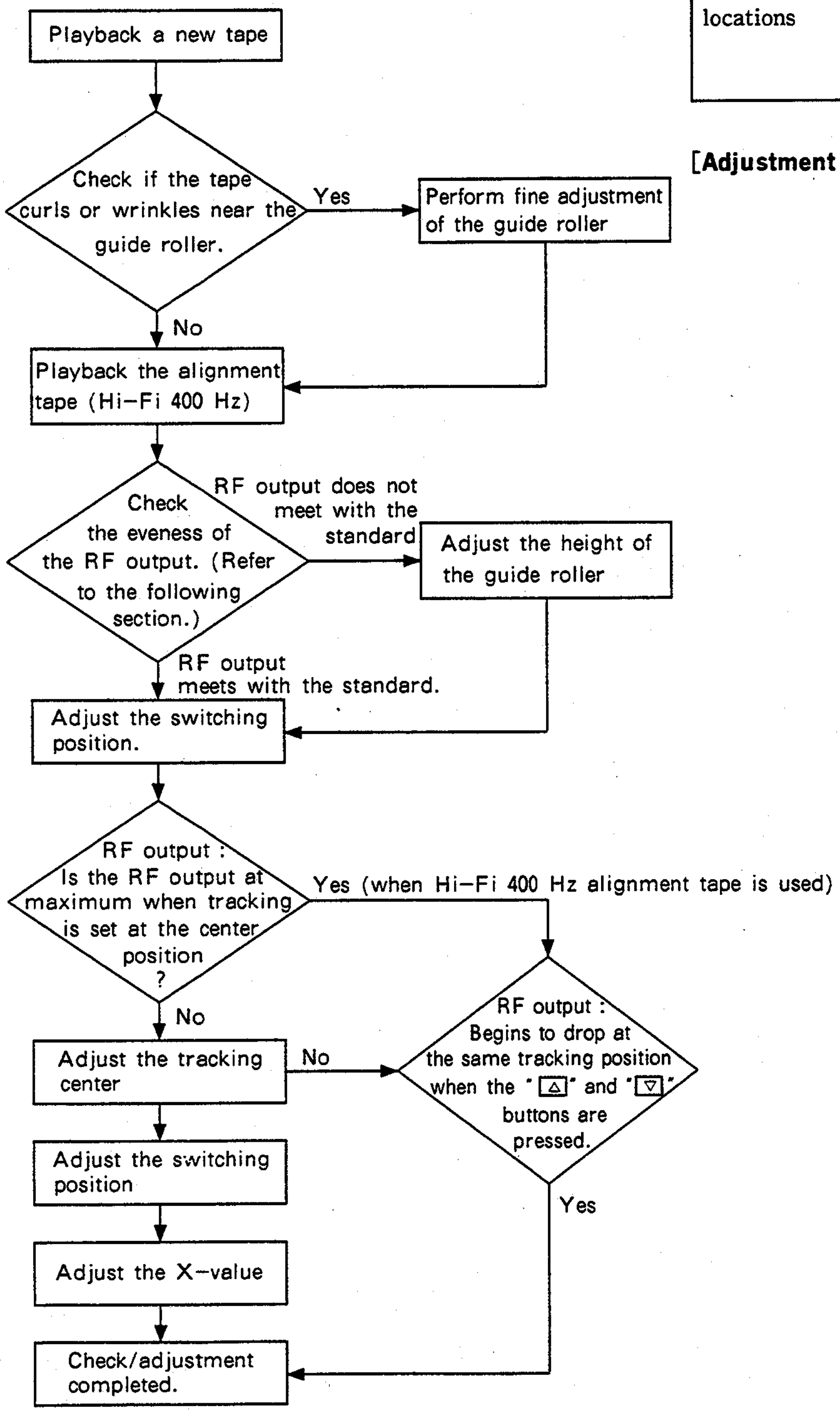
4-1-8. Adjustments after replacing the drum (video head)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Precaution: Turn off the auto tracking and set the manual tracking mode.

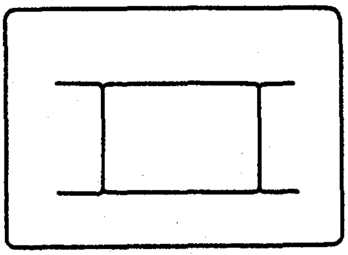
Mode	Playback
Signal	Alignment tape (JVC-MH-1), blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller (refer to 4-1-5.) Switching position, Tracking preset, SP delay mono-multi, X-value (refer to 4-1-8) } (Refer to the Service Guide)

[Adjustment method]

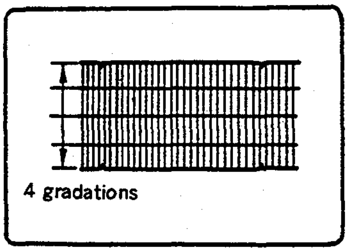

Playback a new tape
Check if the tape curls or wrinkles near the guide roller.
Yes
Perform fine adjustment of the guide roller
No
Playback the alignment tape (Hi-Fi 400 Hz)
Check the eveness of the RF output. (Refer to the following section.)
RF output does not meet with the standard
Adjust the height of the guide roller
RF output meets with the standard.
Adjust the switching position.
RF output : Is the RF output at maximum when tracking is set at the center position ?
Yes (when Hi-Fi 400 Hz alignment tape is used)
No
Adjust the tracking center
No
RF output : Begins to drop at the same tracking position when the "△" and "▽" buttons are pressed.
Yes
Adjust the switching position
Adjust the X-value
Check/adjustment completed.

[Checking the eveness and fluctuation of the RF output]

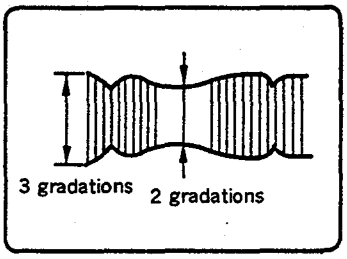
1) Set the RF output to the maximum level using the tracking buttons.



2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.



5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

4-1-9. Checking the tension and torque

Purpose: To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.

If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode without loading a cassette tape. (Refer to section 1-3.)
Measuring instrument	Torque gauge, Torque gauge adapter

Item	VTR operation mode	Reel to be measured	Measurement value
Main brake torque	Stop	Supply and take-up reels	170g•cm or more
Review torque	Review	Supply reel	180±30g•cm (using the torque cassette)
Take-up torque	Playback	Take-up reel	80 to 140g•cm (using torque cassette)
Back tension torque	Rewind	Take-up reel	4 to 25 g•cm

[Check method]

Measure the torque using the torque gauge and torque gauge adaptor with the torque gauge fixed.

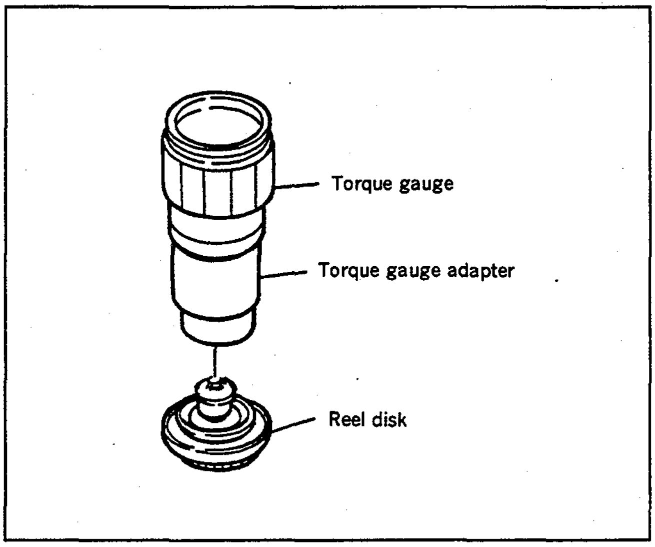


Fig. 4-13.

VHS MECHANICAL ADJUSTMENT MANUAL Ⅱ

English
89H0489-1

Sony Corporation
Home Video Group

9-972-816-11

©1989. 8

Published by A/V Engineering Service Dept.

Printed by: Schaltungsdienst Lange, Berlin (GERMANY)

SLV-770HF/771HF/920HF

RMT-V140/V140A

SONY.

SERVICE MANUAL

US Model
SLV-770HF/771HF/920HF
Canadian Model
SLV-770HF/920HF
Chilean Model
Mexican Model
Philippine Model
PX Model
Tourist Model
SLV-920HF

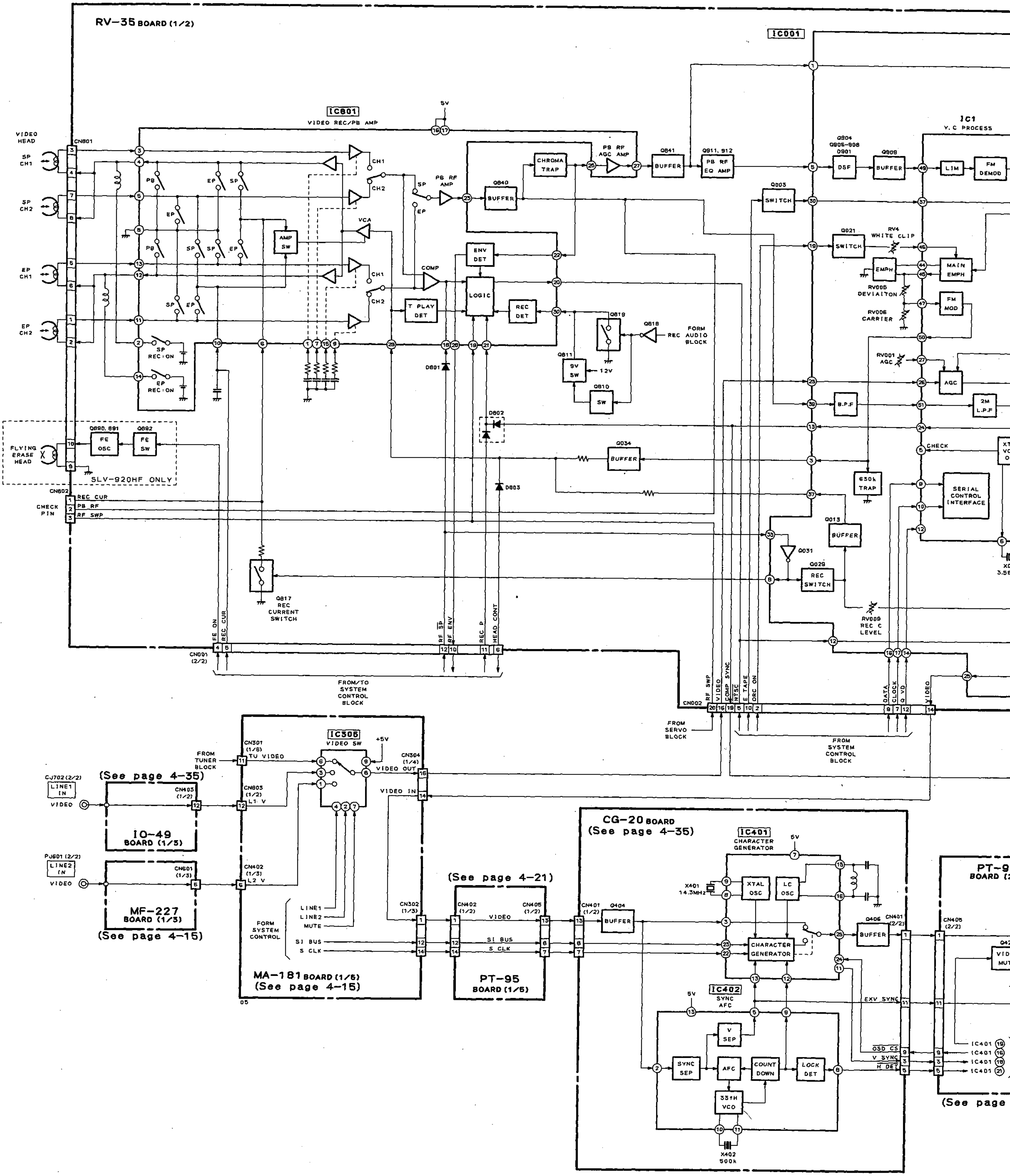
SUPPLEMENT-1

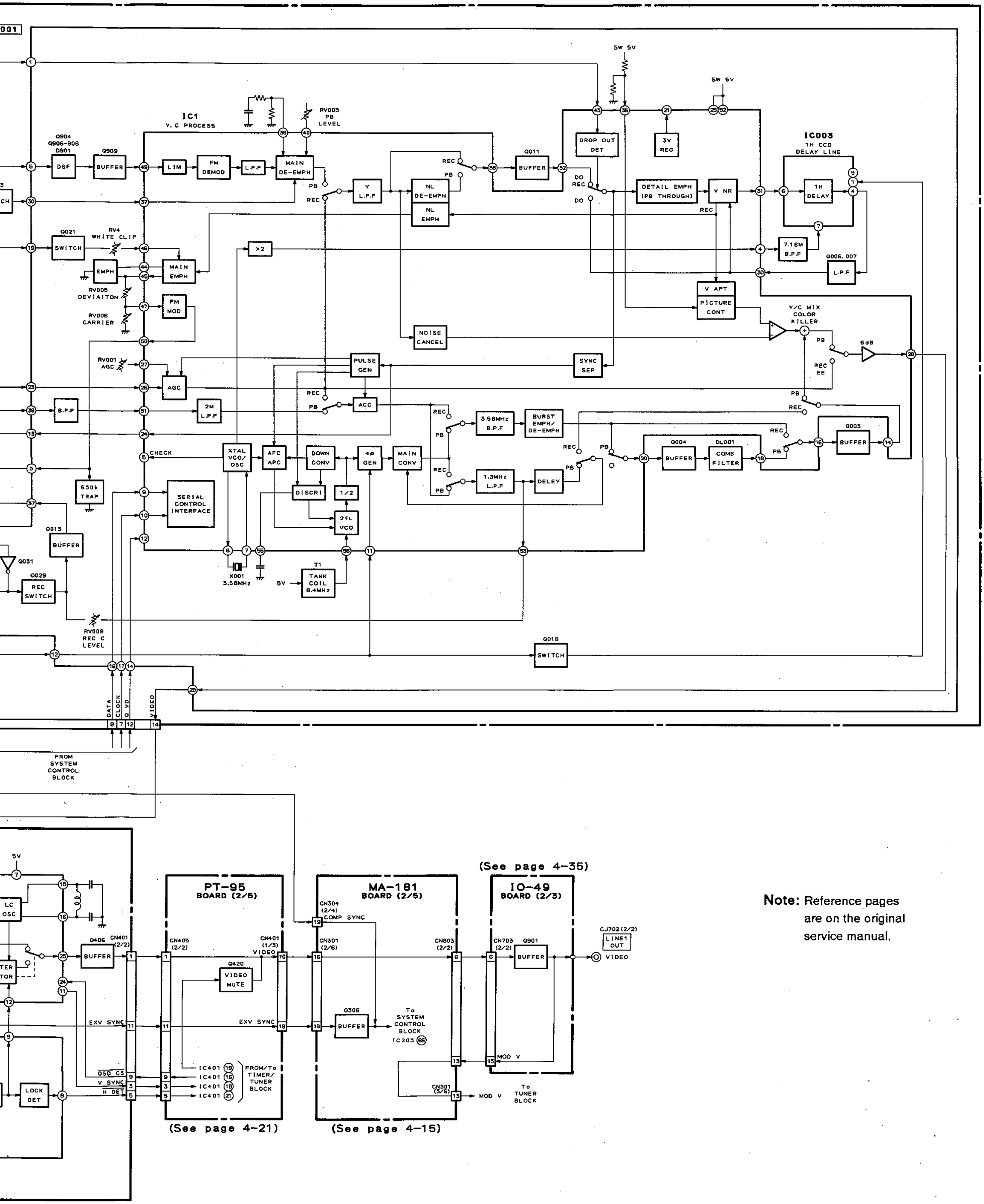
Subject:
RV-35 Board Informations

This supplement updates the service manual to include production changed.
RV-33 board has been changed to RV-35 board in the midst of production.
So the adjustments of RV-33 board are not required because the adjusting volumes move on to HIC IC001 and they are factory preset.
File this suppliment with the service manual.
RV-35 board has been used on the models as follows.

Model Name	Destination	Serial Number
SLV-770HF	US	142301 and later
SLV-770HF	Canadian	A100001 and later
SLV-771HF	US	104851 and later
SLV-920HF	US	119601 and later
SLV-920HF	Canadian	A100001 and later
SLV-920HF	Chilean	100601 and later
SLV-920HF	Mexican	100601 and later
SLV-920HF	PX	100001 and later

1. BLOCK DIAGRAM


RV-35 BOARD (1/2)
IC001
IC801
VIDEO REC/PB AMP
5V
VIDEO HEAD
CN801
SP CH1
SP CH2
EP CH1
EP CH2
PB
EP
SP
AMP SW
VCA
CH1
CH2
COMP
PB RF AMP
CHROMA TRAP
PB RF AGC AMP
Q841
BUFFER
Q811, 912
PB RF EQ AMP
Q840
ENV DET
LOGIC
REC DET
T PLAY DET
SP REC:ON
EP REC:ON
D801
D802
D803
Q819
Q818
FORM AUDIO BLOCK
Q811
9V SW
12V
Q810
SW
Q034
Q003
SWITCH
Q904
Q905-908
Q901
DSF
Q909
IC1
V.C PROCESS
LIM
FM DEMOD
Q021
RV4
WHITE CLIP
EMPH
MAIN EMPH
RV005
DEVIAITON
RV006
CARRIER
FM MOD
RV001
AGC
B.P.F
2M L.P.F
CHECK
SERIAL CONTROL INTERFACE
650k TRAP
Q013
Q031
Q029
REC SWITCH
RV009
REC C LEVEL
Q890, 891
Q892
FE OSC
FE SW
FLYING ERASE HEAD
SLV-920HF ONLY
CN802
CHECK PIN
REC CUR
PB RF
RF SWP
Q817
REC CURRENT SWITCH
FE ON
REC CUR
RF SP
RF ENV
REC P
HEAD CONT
CN001 (2/2)
FROM/TO SYSTEM CONTROL BLOCK
CN002
RF SWP
VIDEO
COMP SYNC
NTSC
E TAPE
ORC ON
DATA
CLOCK
Q VD
VIDEO
FROM SERVO BLOCK
FROM SYSTEM CONTROL BLOCK
IC505
VIDEO SW
+5V
CN301 (1/6)
FROM TUNER BLOCK
TU VIDEO
CN304 (1/4)
VIDEO OUT
VIDEO IN
CN803 (1/2)
L1 V
CN402 (1/3)
L2 V
CJ702 (2/2)
LINE1 IN
VIDEO
(See page 4-35)
CN403 (1/2)
IO-49 BOARD (1/5)
PJ601 (2/2)
LINE2 IN
CN601 (1/3)
MF-227 BOARD (1/3)
(See page 4-15)
FORM SYSTEM CONTROL
LINE1
LINE2
MUTE
SI BUS
S CLK
CN302 (1/3)
MA-181 BOARD (1/5)
(See page 4-15)
(See page 4-21)
CN402 (1/2)
CN405 (1/2)
VIDEO
SI BUS
S CLK
PT-95 BOARD (1/5)
CG-20 BOARD
(See page 4-35)
IC401
CHARACTER GENERATOR
CN401 (1/2)
Q404
BUFFER
X401 14.3MHz
XTAL OSC
LC OSC
CHARACTER GENERATOR
Q406
BUFFER
CN401 (2/2)
IC402
SYNC AFC
V SEP
SYNC SEP
AFC
COUNT DOWN
LOCK DET
331H VCO
X402 500k
EXV SYNC
OSD CS
V SYNC
H DET
CN405 (2/2)
IC401 ⑲
IC401 ⑯
IC401 ⑱
IC401 ㉑
PT-9
BOARD
(See page


IC1
Y, C PROCESS
SW 5V
RV003
PB
LEVEL
Q904
Q906-908
D901
DSF
Q909
BUFFER
LIM
FM
DEMOD
L.P.F
MAIN
DE-EMPH
Y
L.P.F
NL
DE-EMPH
NL
EMPH
Q011
BUFFER
DROP OUT
DET
3V
REG
DETAIL EMPH
(PB THROUGH)
V NR
IC003
1H CCD
DELAY LINE
1H
DELAY
7.16M
B.P.F
Q006, 007
L.P.F
Q021
SWITCH
RV4
WHITE CLIP
EMPH
MAIN
EMPH
RV005
DEVIAITON
RV006
CARRIER
FM
MOD
×2
V APT
PICTURE
CONT
Y/C MIX
COLOR
KILLER
6dB
NOISE
CANCEL
RV001
AGC
PULSE
GEN
SYNC
SEP
AGC
ACC
B.P.F
2M
L.P.F
3.58MHz
B.P.F
BURST
EMPH/
DE-EMPH
Q004
BUFFER
DL001
COMB
FILTER
Q003
BUFFER
CHECK
XTAL
VCO/
OSC
AFC
APC
DOWN
CONV
4φ
GEN
MAIN
CONV
1.3MHz
L.P.F
DELEY
630k
TRAP
DISCRI
1/2
2fL
VCO
SERIAL
CONTROL
INTERFACE
Q013
BUFFER
Q031
Q029
REC
SWITCH
X001
3.58MHz
T1
TANK
COIL
8.4MHz
5V
RV009
REC C
LEVEL
Q018
SWITCH
REC
PB
EE
DO
DATA
CLOCK
VD
VIDEO
FROM
SYSTEM
CONTROL
BLOCK
5V
LC
OSC
LOCK
DET
Q406
BUFFER
CN401
(2/2)
EXV SYNC
OSD CS
V SYNC
H DET
PT-95
BOARD (2/5)
CN405
(2/2)
CN401
(1/3)
VIDEO
Q420
VIDEO
MUTE
IC401 ⑲
IC401 ⑯
IC401 ⑱
IC401 ㉑
FROM/To
TIMER/
TUNER
BLOCK
(See page 4-21)
MA-181
BOARD (2/5)
CN304
(2/4)
COMP SYNC
CN301
(2/6)
CN803
(2/2)
Q306
BUFFER
To
SYSTEM
CONTROL
BLOCK
IC203 ㊱
CN301
(3/6)
MOD V
To
TUNER
BLOCK
(See page 4-15)
(See page 4-35)
IO-49
BOARD (2/3)
CN703
(2/2)
Q901
BUFFER
MOD V
CJ702 (2/2)
LINE1
OUT
VIDEO

Note: Reference pages are on the original service manual.

4. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6727-587-A	RV-35 BOARD, COMPLETE			
		**********************			
		(Ref. No. 1,000 Series)			
		< CAPACITOR >			
C001	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C002	1-124-589-11	ELECT	47uF	20%	16V
C004	1-124-589-11	ELECT	47uF	20%	16V
C005	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C006	1-124-126-00	ELECT	47uF	20%	10V
C007	1-126-962-11	ELECT	3.3uF	20%	50V
C008	1-124-126-00	ELECT	47uF	20%	10V
C009	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C010	1-124-126-00	ELECT	47uF	20%	10V
C073	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C075	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C079	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C098	1-124-126-00	ELECT	47uF	20%	10V
C099	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C260	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C261	1-124-584-00	ELECT	100uF	20%	10V
C262	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C263	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C264	1-124-257-00	ELECT	2.2uF	20%	50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C267	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C268	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C269	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C270	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C274	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C275	1-126-160-11	ELECT	1uF	20%	50V
C276	1-162-306-11	CERAMIC	0.01uF	30%	16V
C801	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C802	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C803	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C804	1-164-159-11	CERAMIC	0.1uF		50V
C805	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C806	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C808	1-124-584-00	ELECT	100uF	20%	10V
C809	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C810	1-124-584-00	ELECT	100uF	20%	10V
C811	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C813	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C814	1-164-159-11	CERAMIC	0.1uF		50V
C815	1-164-159-11	CERAMIC	0.1uF		50V
C816	1-164-159-11	CERAMIC	0.1uF		50V
C817	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C818	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C822	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C826	1-124-229-00	ELECT	33uF	20%	10V
C827	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C829	1-162-306-11	CERAMIC	0.01uF	30%	16V
C830	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C836	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C838	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C839	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C840	1-162-306-11	CERAMIC	0.01uF	30%	16V
C842	1-124-903-11	ELECT	1uF	20%	50V
C843	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C844	1-124-589-11	ELECT	47uF	20%	16V
C890	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C893	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C894	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C895	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C896	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C897	1-126-157-11	ELECT	10uF	20%	16V
C910	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C918	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
		< CONNECTOR >			
CN001	1-573-828-11	CONNECTOR, BOARD TO BOARD 14P			
CN002	1-573-834-11	CONNECTOR, BOARD TO BOARD 20P			
CN801	1-563-590-11	CONNECTOR, FLEXIBLE 13P			
* CN802	1-564-029-00	PIN, CONNECTOR 4P			
* CN803	1-564-013-11	PIN, CONNECTOR 3P			

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D801	8-719-801-78	DIODE 1SS184	
D802	8-719-801-78	DIODE 1SS184	
D803	8-719-801-78	DIODE 1SS184	
		< DELAY LINE >	
DL001	1-415-668-11	DELAY LINE, ULTRASONIC	
DL001	1-415-668-31	DELAY LINE, ULTRASONIC	
DL001	1-415-668-11	DELAY LINE, ULTRASONIC	
		< IC >	
IC001	1-810-533-11	IC MODULUE, YC 1 (NTSC) JFA1113	
IC260	8-759-055-49	IC AN3327K	
IC801	8-759-267-78	IC HA118191ANT	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR003	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR004	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR005	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR006	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR007	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR008	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR009	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR010	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR011	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR012	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR013	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR014	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR015	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR016	1-216-295-00	CONDUCTOR, CHIP (2012)	
		< COIL >	
L001	1-410-522-11	INDUCTOR 120uH	
L002	1-414-189-31	INDUCTOR 100uH	
L003	1-414-189-31	INDUCTOR 100uH	
L004	1-414-189-31	INDUCTOR 100uH	
L005	1-414-189-31	INDUCTOR 100uH	
L017	1-408-948-00	INDUCTOR 220uH	
L018	1-414-189-31	INDUCTOR 100uH	
L260	1-414-189-31	INDUCTOR 100uH	
L801	1-408-948-00	INDUCTOR 220uH	
L802	1-408-948-00	INDUCTOR 220uH	
L803	1-408-982-21	INDUCTOR 100uH	
L804	1-408-982-21	INDUCTOR 100uH	
L810	1-408-985-21	INDUCTOR 180uH	
L812	1-408-982-21	INDUCTOR 100uH	
L813	1-408-970-21	INDUCTOR 10uH	
L814	1-408-970-21	INDUCTOR 10uH	
L890	1-408-968-21	INDUCTOR 6.8uH	
L891	1-408-982-21	INDUCTOR 100uH	
L908	1-408-982-21	INDUCTOR 100uH	
L909	1-408-977-21	INDUCTOR 39uH	
		< TRANSISTOR >	
Q003	8-729-421-19	TRANSISTOR UN2213	
Q034	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q810	8-729-421-19	TRANSISTOR UN2213	
Q811	8-729-921-12	TRANSISTOR 2SD1834	
Q817	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q818	8-729-421-19	TRANSISTOR UN2213	
Q819	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q840	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q841	8-729-216-21	TRANSISTOR 2SA1162Y	
Q890	8-729-216-22	TRANSISTOR 2SA1162-G	
Q891	8-729-216-22	TRANSISTOR 2SA1162-G	
Q892	8-729-421-19	TRANSISTOR UN2213	
Q911	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q912	8-729-216-21	TRANSISTOR 2SA1162Y	
		< RESISTOR >	
R003	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R004	1-247-822-11	CARBON 430 5% 1/4W	
R006	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R007	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R072	1-247-854-11	CARBON 9.1K 5% 1/4W	
R082	1-249-420-11	CARBON 1.8K 5% 1/4W	F
R083	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R084	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R085	1-216-045-00	METAL CHIP 680 5% 1/10W	
R119	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R262	1-216-035-00	METAL CHIP 270 5% 1/10W	
R263	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R265	1-216-033-00	METAL CHIP 220 5% 1/10W	
R266	1-249-418-11	CARBON 1.2K 5% 1/4W	F
R267	1-216-035-00	METAL CHIP 270 5% 1/10W	
R268	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R271	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R276	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R801	1-216-023-00	METAL CHIP 82 5% 1/10W	
R802	1-216-037-00	METAL CHIP 330 5% 1/10W	
R805	1-211-955-11	METAL GLAZE 13 0.50% 1/10W	
R806	1-216-023-00	METAL CHIP 82 5% 1/10W	
R807	1-216-023-00	METAL CHIP 82 5% 1/10W	
R811	1-216-037-00	METAL CHIP 330 5% 1/10W	
R812	1-216-023-00	METAL CHIP 82 5% 1/10W	

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Ref. No.	Part No.	Description				Remark
R815	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R816	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R817	1-249-417-11	CARBON	1K	5%	1/4W	F
R835	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R836	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R838	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R842	1-208-750-11	METAL GLAZE	47	0.50%	1/10W	
R843	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R844	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R846	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R847	1-216-078-00	METAL GLAZE	16K	5%	1/10W	
R856	1-216-033-00	METAL CHIP	220	5%	1/10W	
R857	1-216-033-00	METAL CHIP	220	5%	1/10W	
R858	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R859	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R861	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R862	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R863	1-216-047-00	METAL CHIP	820	5%	1/10W	
R891	1-216-011-00	METAL CHIP	27	5%	1/10W	
R894	1-216-041-00	METAL CHIP	470	5%	1/10W	
R895	1-216-054-00	METAL GLAZE	1.6K	5%	1/10W	
R896	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R897	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R898	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R936	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R937	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R938	1-216-047-00	METAL CHIP	820	5%	1/10W	
R939	1-216-049-00	METAL CHIP	1K	5%	1/10W	

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English
95A0551-1
Printed in Japan
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Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

9-973-500-81

Published by Personal A&V Products Div.
Quality Engineering Dept.